The SCOTT PAPER COMPANY of Chester, Pennsylvania, takes possession November 15th of the Anacortes, Washington, unbleached sulphite pulp mill recently purchased from the Puget Sound Pulp & Timber Company.

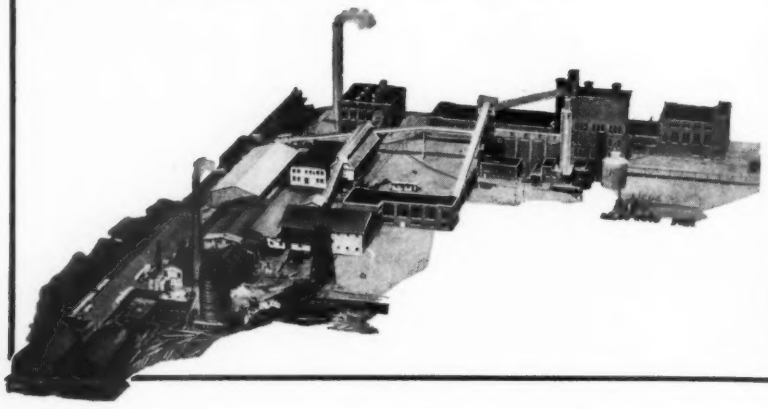
PACIFIC Pulp & Paper INDUSTRY

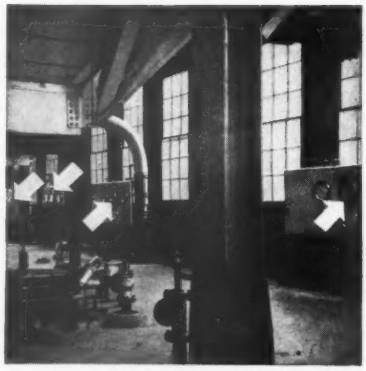
Vol. 14 • No. 10 OCTOBER 1940

Another Modern Mill

NOW SERVED BY Bristol's

Puget Sound Pulp & Timber Co., Bellingham, Wash., put (a) Bristol's Pressure and Temperature Recorders on Digesters and Accumulator. (b) Bristol's Pyromaster Potentiometer Pyrometers in Acid Plant. (c) Bristol's Low Range Draft Gauges on Suction Fan.

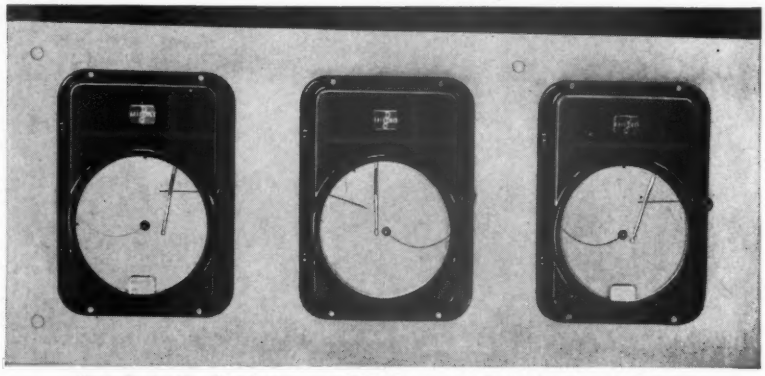




Close-up of two Bristol's Pyromaster Potentiometer Pyrometers for checking temperatures in acid making plant, and two Bristol's Low Range Draft Gauges for recording fan suction.

Known as one of the most modern mills on the Pacific Coast, with a daily capacity of 275 tons of unbleached sulphite pulp, the Puget Sound Pulp & Timber Co., at Bellingham, Wash., is still another of the growing number of mills that recognize the value of Bristol's equipment in watching over critical processing.

Here at Bellingham you will find Bristol's Pressure Gauges, Bristol's Recording Thermometers, Bristol's Pyromaster Pyrometers and Bristol's Draft Gauges — serving on digesters, accumulator, in the acid plant and on the suction fan.



View, showing three Bristol's Pyromaster Electric Thermometers for charting digester temperatures.

For a detailed description of this equipment, as well as a clear explanation of the economies Bristol's will make possible in improving pulp and paper process operations, write for our technical bulletins.

BRISTOL'S
TRADE MARK REG. U. S. PAT. OFFICE

THE BRISTOL COMPANY
WATERBURY CONNECTICUT

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"Headquarters at Berlin"

The news that the headquarters of the European wood pulp cartel will be in Berlin is disturbing to American paper mills buying wood pulp.

At the end of the wood pulp report cabled by the American Commercial Attache in Stockholm, September 18th, was the sentence, "Cartel headquarters will be at Berlin."

Those in the American pulp and paper industry who had been expecting imports of wood pulp from Sweden, Finland and Norway to be resumed upon the old basis when the war in Europe is over, were brought up with a jerk. The good old days may not return. The present dependence upon North American sources of wood pulp may become permanent.

The report:

● "A rigid control of all major phases of operations in the European wood pulp industry is contemplated by the wood pulp cartel, according to a report from the Office of the American Commercial Attache, Stockholm, received by the Forest Products Division, Department of Commerce.

"Final details are not available but it is contemplated that there will be a rigid control of production, according to the report. Exports of each country and every mill will be on quota basis, with prices fixed by committees of representatives of each exporting country. Determination of prices to each export market for every type of pulp will be by vote. The number of votes to which each exporting country is entitled will be decided on every type of pulp for each export market by the tonnage of past exports. On the basis of exports to the United States, 1929 to 1939, inclusive, Sweden will have approximately the following percentage of votes on the types of pulp indicated: Unbleached sulphite, 64.3 per cent; bleached sulphite, 31 per cent; unbleached sulphate, 80 per cent; and bleached sulphate, 83.9 per cent. Germany and Norway and all others except Finland hold 54 per cent of the votes on bleached sulphite. Cartel headquarters will be at Berlin."

A later report from Stockholm said: "An agreement has been reached regarding the allotments for shipments of wood pulp by the European wood pulp cartel to Belgium and the Netherlands for the last 4 months of 1940. The headquarters of the cartel are to be in Berlin.

"Under the terms of the agreement, the Netherlands will be supplied with approximately 12,000 tons of sulphite pulp for the remainder of this year. One-third will be supplied by Sweden, one-third by Germany and the remainder by all other cartel members. Of the 18,000 tons of sulphite, which it is estimated that Belgium will require, one-third will be supplied by Sweden, one-third by Germany, and the remainder by all other cartel members.

"Both the Netherlands and Belgium will take 11,000 tons of sulphite wood pulp, 5,000 tons to be supplied by Sweden, 3,000 tons by Germany and the balance by all other countries. No decision has been made concerning the amount which Italy or France will receive for the remainder of the year, but it was stated that wood pulp prices for Italy would be approximately the same as in previous countries. According to the latest information, Sweden will receive the same price for its wood pulp as she does under existing contracts. Details concerning payments through German clearing are still under discussion."

These reports caused speculation as to how democratic the cartel will actually be in practice. The organization apparently gives wide latitude to the representatives of the industry in each country, but this democratic form may be nothing more than a front to hide German domination of the pulp industry of Sweden, Norway and Finland. The freedom of choice reported to be allowed these three pulp producing countries under the cartel agreement is made doubtful by the statement that the cartel headquarters will be at Berlin.

At present with the cork still in the neck of the Baltic bottle, Sweden, Finland and Norway are completely under the commercial domination of Germany. They are reported to be rapidly adjusting their economies to carry on a major portion of their export and import trade with Germany, first, and Russia, second. It is also reported that Germany, in buying lumber, pulpwood, wood pulp and paper from

the three countries, has dictated prices much lower than those in effect prior to the war.

With Sweden, Finland and Norway at the economic mercy of Germany and in view of Germany's announced intention to dominate the economics of Europe, at least of Continental Europe, it is not to be expected that the pulp exporting countries will vote for prices or for quotas not approved by Berlin.

With but a slight trickling of pulp from Finland via Petsamo, the problem is temporarily academic, but at any time it may become of major importance to American buyers and sellers of pulp. Should Germany win the war or should the war become a stalemate with Germany in control of the Continent and the British blockade broken, the German domination of the pulp producing countries will vitally affect the industry in this country. In case Britain wins, the Scandinavian countries and Finland may return to the old basis of a voluntary European pulp cartel largely dominated by Swedish producers.

For the purpose of speculative analysis let us assume that Sweden, Finland and Norway are free at some future date to export pulp to the United States upon the basis outlined in the foregoing reports from Stockholm.

Will they offer their pulp at very low or very high prices? It is generally conceded that prices would be high for a time due to shipping costs which are expected to remain at present high levels because of the tonnage sunk and the danger of floating mines. It is also expected that wood and production costs in the northern countries will be high for some time after full production is again attained. Another reason advanced is that the European producers will be forced to sell to Germany at little or no profit, if not at a loss, and they will endeavor to average out by charging American paper mills all the market will stand.

The condition of the American paper industry would have much to do with the prices of foreign pulp. If the American mills were busy the price would be high but if the production ratio dropped down into the seventies or lower the price would come down below the cost of producing American pulp as it has done in the past. It would not come down immediately if costs remained high in Sweden, Norway and Finland, but it would be low as soon as they could drop it for those countries will be, if and when they are free to export, desperate for dollar exchange.

If the American paper mills were getting along pretty well with domestic and Canadian pulp, there would be no tendency to buy overseas pulp at high prices. If they were badly in need of pulp or the prices were lower than for North American pulp there would be the temptation to purchase from the German dominated countries.

Unless this country does the unexpected and changes its attitude toward Germany, the buying of pulp from sources that would indirectly benefit that country would be a highly unpopular procedure, and it might easily be considered unpatriotic if the American attitude toward Germany becomes more actively antagonistic. Those who bought might even be boycotted.

If this should become the attitude of the American people the government might consider pulp from Sweden, Finland and Norway as being of German origin and slap on a prohibitive tariff.

The precarious situation in which we find ourselves in the case of tin and rubber should be sufficient warning that the only safe course to follow is to develop adequate sources of raw materials within our own borders if at all possible. It is not only possible in the case of wood pulp but necessary as a measure of national defense against the loss of foreign supply sources and as protection against Nazi domination of our pulp and paper industry.

Self-sufficiency in wood pulp is today more than ever a common sense objective for the American pulp and paper industry.

John Fulton to Manage Pacific Coast Supply Co.

● John M. Fulton, who for the past 10 years has been California manager, with headquarters in San Francisco, of the Pacific Coast Supply Company, has been promoted to the post of manager of the company, with offices in Portland .

Arthur M. Mears, whom Mr. Fulton succeeds, has resigned from the managership of the Pacific Coast Supply Company to go into the steel foundry business for himself, with which industry he was identified before he joined the Pacific Coast Supply Company.

JOHN M. FULTON, Manager Pacific Coast Supply Co.

Among the lines handled by the Pacific Coast Supply Company are: Bemis Associates Inc., Calco Chemical Co., Inc.; California Cotton Mills, Inc.; Cameron Machine Co.; Eastwood-Nealley Corp.; Farrel-Birmingham Co., Inc.; Heller & Merz; F. C. Huyck & Sons; Control Equipment Corp.; E. D. Jones & Sons Co.; Charles Mundt & Sons; Norton Co.; B. F. Perkins & Sons, Inc.; J. J. Plank & Co.; F. W. Roberts Mfg. Co.; Texas Gulf Sulphur Co., and the Union Screen Plate Co.

Just who will replace Mr. Fulton at San Francisco has not yet been announced.

Camas Paper School Opens This Month

● The Eighth annual Crown Willamette Paper Company's paper school, Camas, Wn., will have its opening dates October 22, 23 and 24. The first-year students starting on the 22nd, third and fourth year classes the 23rd, and second year classes the 24th. The school is meeting in the assembly room on the second floor of the MacMaster Building in Camas.

This is the largest and most complete paper school in existence. In addition to the faculty drawn from the personnel of the local pulp and paper mill, prominent outside speakers will lecture to the class. A large registration is anticipated this year. Instruction and books are furnished complimentary to the students. These classes are open to all employees of the Crown Zellerbach Corporation.

Puget Sound Construction Moving Ahead Rapidly

Pile driving began September 17th for the new unit to add 50% or 50,000 tons annually to the Bellingham mill's unbleached sulphite pulp capacity—Construction will be completed early in March.

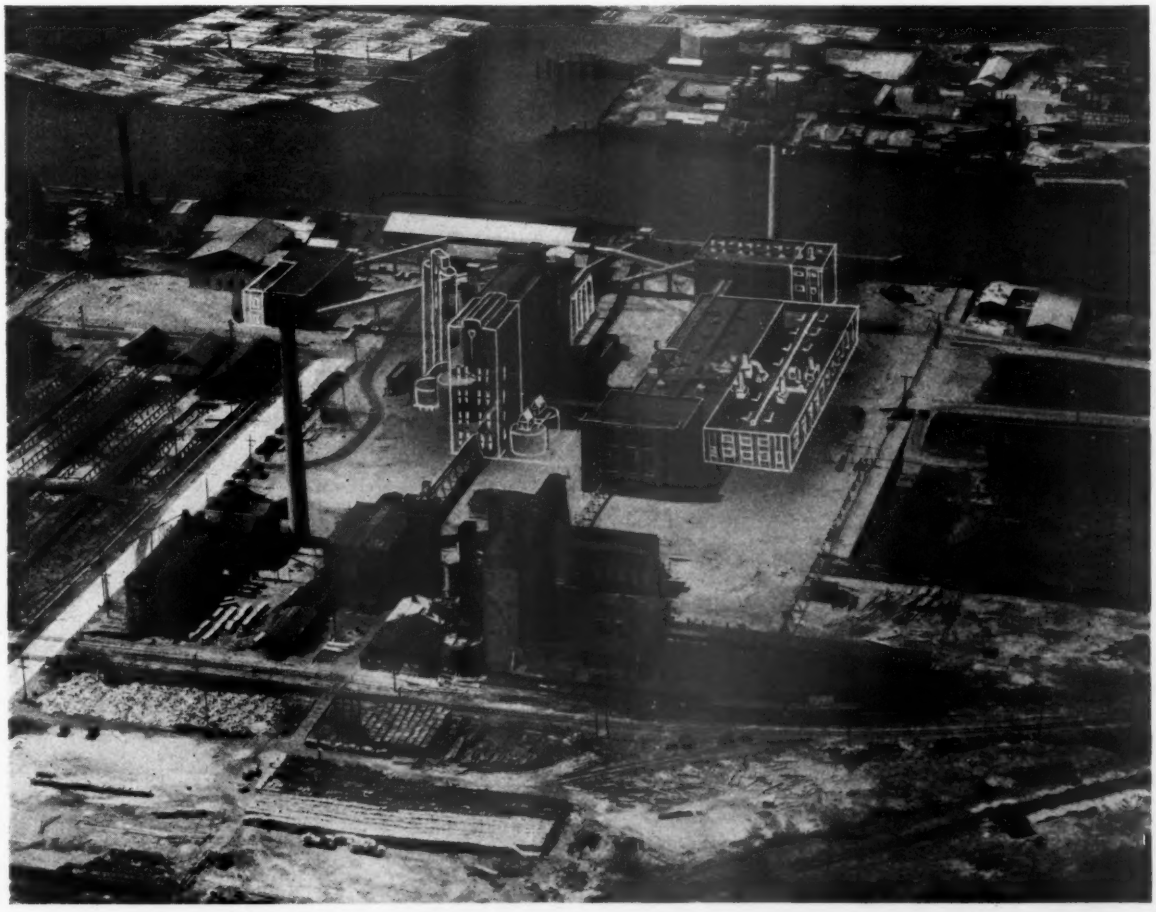
WORK on the Puget Sound Pulp & Timber Company's new unit began September 17th with the driving of piles for the machine room. Following the approval by the common stockholders on September 9th of the plan to extend the capacity of the company's modern unbleached sulphite pulp mill at Bellingham by 50 per cent or 50,000 tons annually, President Ossian Anderson gave the word and consulting engineer Harold D. Cavin started the construction job immediately.

The Howard S. Wright & Company of Seattle were awarded the general construction contract. Manager Walter DeLong began negotiations for the needed equipment and up to October 1st the following equipment was definitely ordered.

Two new 18x56-foot digesters will be added to the present three of the same size in the mill built in 1938. These will be lined by the Stebbins Engineering Corporation of Seattle. The circulating systems and all stainless steel fittings will be furnished by the Electric Steel Foundry Company of Portland. One acid plant, two blow pits and two vomit stacks of Douglas fir will be supplied by the National Tank & Pipe Company of Portland. A system for recovering the SO_2 gas from the vomit stacks will be installed of the same type now being placed in operation on the original mill vomit stacks.

The acid plant extension will be taken care of by the G. D. Jenssen Company of Seattle.

A fourth Stirling type boiler will be installed adding 645 hp. to the



The PUGET SOUND PULP & TIMBER COMPANY'S construction program at Bellingham is indicated by the artist's sketches on this aerial photograph of the 100,000 tons annual capacity unbleached sulphite pulp mill which will be increased 50% by the additions outlined.

steam system at the rate of 50,000 pounds of steam per hour on hemlock hogged fuel and up to 70,000 pounds on oil.

A new baling press has been ordered for the additional drying machine which is to be installed. The pressure type filter plant will be expanded by six units to furnish enough additional filtered water.

The dock is being lengthened and a total of 15,000 square feet of dock space added. A warehouse 200x60 feet is being constructed on the enlarged dock.

From the Improved Paper Machinery Corporation has been ordered twelve 14-plate flat screens, two knotters, two 42-inch by 120-inch open cylinder deckers and one 5x7-foot rubber covered washer. This equipment is of the same design as that furnished by Impco in 1937 when the second unit of the Bellingham mill was constructed.

Other orders for equipment are being placed almost daily as it is planned to have the latest unit operating early in March of next year.

On the accompanying aerial photograph taken after the completion of the new unit built in 1938, has been sketched the outlines of the buildings to be added during the present expansion program.

B. C. Pulp Making Financial Progress

● Earnings of British Columbia Pulp & Paper Company, whose two mills at Woodfibre and Port Alice are now in full production, have increased to such an extent in recent months that it has been found possible to redeem in full three back coupons and the one due November 1, 1940, on the first mortgage 6 percent bonds.

The redemption will be made with interest at 6 percent on the overdue intalments, according to President Lawrence Killam.

In April, 1939, bondholders have the company authority to postpone interest payments due in 1939 and 1940 until November of 1942, but the company reserved the privilege of prepayment if earnings should permit.

At the time the bondholders were asked for this permission, British Columbia Pulp & Paper had been through a year of severe depression as a result of curtailment in buying in the Far East owing to the Sino-Japanese war. Since then, however, the whole situation has been reversed. With Baltic mills virtually out of the picture so far as non-European markets are concerned, the demand on British Columbia Pulp & Paper Company's output has surpassed all previous records. The Port Alice and Woodfibre mills are now producing between 100,000 and 110,000 tons of rayon pulp and bleached sulphite annually.

So great has been the improvement in earnings that company directors decided to bring up to date the interest payments on the first mortgage bonds due 1950 and outstanding to the amount of $3,130,500. The four semi-annual coupons will require an outlay by the company of $375,660 before adding the interest on overdue coupons.

Whether earnings will make it possible to make payments on the interest on 7 percent general mortgage bonds to be resumed next year will depend to a large extent on the new Canadian income tax regulations with respect to excess profits.

British Columbia Pulp & Paper Company belongs to the category of businesses depressed during the standard period of 1936-37 inclusive. Excess profits tax will be 75 percent of the difference between profits of the year of taxation and the profits of the standard or base period. Company officials have placed the company's position before the referees appointed to administer the legislation, and in view of the unsual situation prevailing in the company's major market in the Orient some concessions may be made.

Deferred interest on the 7 percent general mortgage bonds at December 31, 1939, amounted to $733,334.

Driving piling for the new machine room, part of the 50% expansion program of the Puget Sound Pulp & Timber Company at Bellingham, Washington. Photograph taken October 1st.

Cavin, Marshall & Barr Move to Larger Offices

● The consulting engineering firm of Cavin, Marshall & Barr moved early in September from 1215 Exchange Building, Seattle, to larger quarters in 2205-6 in the same building.

Increasing volume of engineering work necessitated the move.

News of the Prince Rupert Project

● Engineers representing Nesbitt, Thomson Company, Toronto investment house, are expected on the Pacific Coast shortly to investigate plans for the proposed bleached sulphite mill promoted for several years past by Frank L. Buckley of Vancouver.

Mr. Buckley tells Pacific Pulp & Paper Industry that while the war and the consequent unsettlement of financial markets made it impossible to go ahead with financing of the Canadian-American Pulp Company on the original basis, the growing requirements of pulp have resulted in reviving interest in the project.

San Francisco interests are said to be still participating in the enterprise, but the major interest is held by Nesbitt, Thomson.

Several changes in the original setup would be necessary, however. Since war broke out the Canadian government has taken over the site at Prince Rupert which Mr. Buckley and his associates had arranged for. However, the by-law which the city of Prince Rupert passed giving the company free water and taxation over a term of years is still valid.

Mr. Buckley reports that another site has been tentatively acquired on the Prince Rupert waterfront.

Alcorn Named Plant Engineer Hamilton Technical Director

● Gerald F. Alcorn, technical director, Everett Mill, Pulp Division Weyerhaeuser Timber Company, Everett, Washington, since the operations began in 1936, was appointed plant engineer on October 1st by G. S. Brazeau, manager of the Everett Mill. Mr. Alcorn succeeds L. E. Hill who was recalled to active duty by the Navy in August of this year.

At the same time, Mr. Brazeau announced the appointment of De Vane Hamilton as technical director to succeed Mr. Alcorn; of Carl Ries in charge of maintenance; and Tom Stewart as power plant engineer.

Mr. Alcorn is a chemical engineer, graduating from the University of Washington in 1930. He went to work for the Longview Mill, Pulp Division as a chemist and from there was transferred to Everett in 1936.

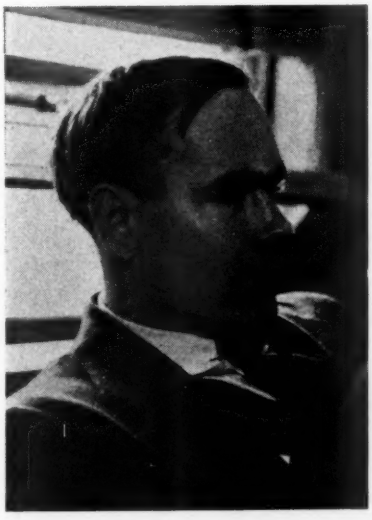
Mr. Hamilton, who has been assistant technical director since the mill started in 1936, is a 1933 graduate in chemical engineering from Washington State College. From 1933 until 1936 he was a chemist with the Longview Mill of the Pulp Division. In 1937-1938 he spent a year as a special student at the Institute of Paper Chemistry in Appleton, Wisconsin.

Mr. Ries, who has been power plant engineer since the Everett Mill was built, was prior to that a shift engineer for the Washington Gas & Electric Company in Longview. In taking charge of all maintenance work Mr. Ries succeeds George Nelson who has resigned to enter business in Portland.

Mr. Stewart was a shift engineer in the power plant of Mill B, Weyerhaeuser Timber Company, Everett, before transferring to the Pulp Division.

Hanny to Serve On Draft Board

●J. E. Hanny, manager of the Crown Willamette Paper Company, Division of Crown Zellerbach Corporation at Camas, Washington, has been appointed a member of the selective draft board.



GERALD F. ALCORN, Plant Engineer, Everett Mill, Pulp Division Weyerhaeuser Timber Company.

Superintendents To Meet At Longview, December 7th

Hotel Monticello place of one-day meeting of the Pacific Coast Division of the American Pulp & Paper Mill Superintendents Association.

● The Pacific Coast Division of the American Pulp & Paper Mill Superintendents Association will hold a one-day meeting at the Hotel Monticello in Longview, Washington, on Saturday, December 7th.

Chairman Anton Siebers of Longview made the announcement in mid-October and stated that the morning will be devoted to the presentation and discussion of several papers and, following luncheon, the afternoon will be given over to the usual Superintendents Round Table Discussion. In the evening there will be a dinner and a dance.

Those who arrive on Friday afternoon will be welcome at the three mills in Longview, the Longview Fibre Company, of which Mr. Siebers is paper mill superintendent, the bleached sulphite mill of the Pulp Division, Weyerhaeuser Timber Company and board mill of the Pacific Straw Paper & Board Company.

Mr. Siebers is in charge of arrangements for the December meeting in Longview. The complete program will be published in the November number of PACIFIC PULP & PAPER INDUSTRY.

Reservations should be sent to Mr. Anton Siebers, Longview Fibre Company, Longview, Washington.

Ed Tidland Visiting Eastern Plants

●Ed Tidland of the Pacific Coast Supply Company, Portland, Oregon, left October 2nd for a three week trip to visit the plants of two of the supply company's principals, the Eastwood-Nealley Corporation, of Belleville, N. J., manufacturers of Eastwood fourdrinier wires; and the woolen mills of F. C. Huyck & Sons of Albany, N. Y., manufacturers of papermaking felts.

He is expected to return to the Pacific Coast around October 25th.

DeVANE HAMILTON, Technical Director, Everett Mill, Pulp Division, Weyerheauser Timber Company.

St. Regis Absorbs Subsidiary Companies

● Effective October 1st the St. Regis Kraft Company, Panelyte Corporation and New Hampshire-Vermont Lumber Company, subsidiaries of the St. Regis Paper Company, were dissolved and their assets acquired by the St. Regis Paper Company.

"Herefater," stated Roy K. Ferguson, president of the St. Regis Paper Company, "these properties will be operated as Divisions of the St. Regis Paper Company. There will be no change in the policies or conduct of the business with our valued customers and other business connections."

Production Ratio Below Year Ago

● The weekly production ratio report, paper production as a percentage of capacity, of the American Paper & Pulp Association, was 89.2 per cent for the week ending September 28th as compared with 95.7 per cent for the comparable week in 1939.

The production ratio for the month of September was 82.6 per cent compared with 88.7 per cent in September of 1939. In 1939 the ratio started in January with 77.5 per cent and rose to a high of 97.2 per cent in December. In January of 1940 the ratio was 90.2 per cent, declined to 83.9 per cent in March and rose to a high of 93.8 per cent in June. It then declined to 97.3 per cent in August and to the 82.6 per cent in September.

Paperboard operating ratios as reported by the National Paperboard Association showed 72 per cent for September, 1940, against 74 per cent in September a year ago. The board industry attained a high of 79 per cent in June of this year compared with a high of 84 per cent in October of 1939.

Powell River's Pipe Band On Goodwill Tour

● Fourteen members of the bagpipe band of the Powell River Company, Limited, Powell River, B. C., left September 27th on a month's goodwill tour of California, Texas and Oklahoma.

Travelling by plane the band stopped in San Francisco September 28th and 29th to fulfill two engagements at the Golden Gate International Exposition on Treasure Island.

They will take part in the opening of the State Fair of Texas at Dallas on Press Day, October 5th.

Elmer C. Lee, president and general manager of the Virginia Dock & Trading Company of Seattle, will manage the tour which will include appearances at Los Angeles, El Paso, Houston, Corpus Christi, San Antonio, Fort Worth, Amarillo and Tulsa in addition to the concerts at San Francisco and Dallas.

One of those responsible for the founding of the band in 1930 is Major John McGregor, V.C., M.C. and Bar, D.C.M. Major McGregor won Great Britain's highest award for valor at Cambrai in September, 1918. He is one of the 53 Canadians awarded this decoration during the World War, and at present time he is commanding officer of a battalion now training at Victoria for overseas service.

Every member of the band will be clad in the traditional piper's dress during the tour. In experience and piping knowledge the band has few equals in Canada, and it gave an excellent account of itself when it was in Vancouver during the Royal visit last year. Members of the band have an average of 13 years' service with the Powell River Company.

Piping is said to be one of the most difficult musical accomplishments, and most pipers start their practice as soon as they are able to crawl. Practically every member of the Powell River aggregation has been playing since he was a child in Scotland. Pipe Major William Whyte will lead the band during the tour.

Victor Poole and Jock Menzies, Jr., the youngest pipers in the band, started six years ago, and were taken into the band only this year. Seven members of the band served with the fighting forces overseas during the last war.

The Virginia Dock & Trading Company of which Mr. Lee is president, is an independent Washington Corporation handling thousands of tons of Powell River newsprint over its docks in Seattle every year.

The band will return to Powell River October 22nd. All travelling from Vancouver to Vancouver will be by plane.

Start and Smythe Tell Mills of New Fourdrinier

● Lester M. Start, vice president of Rice, Barton & Fales, paper machine builders, of Worcester, Mass., and Ray Smythe of Portland, Rice, Barton Pacific Coast representative, spent the early part of October visiting all the mills in the Pacific Northwest.

Mr. Start and Mr. Smythe acquainted the mills with the latest development in fourdrinners, the McDonnel Fourdrinier built by Rice, Barton & Fales. In this new type of fourdrinier the center of the wire is shaken by an intermediate shake roll. Neither the table rolls nor the framework shake. It is reported that greatly improved formation is obtained by the new design. Four McDonnell fourdriniers have been installed this year two are now being built in the company's shops in Worcester.

Mr. Start came to the Coast by plane and flew to Los Angeles before returning to Worcester.

Roberts and Green Win Big Awards

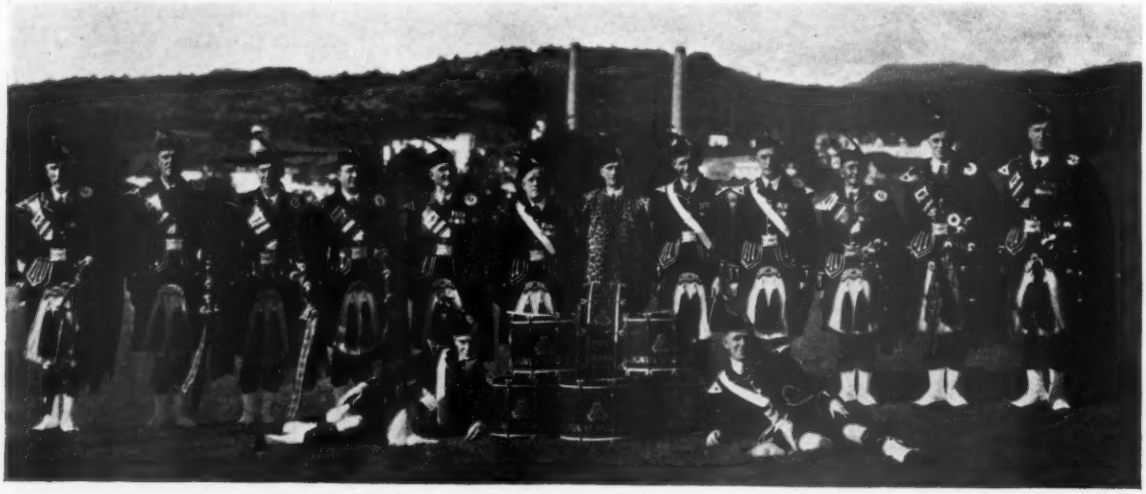
● Johnny Roberts of the Crown Willamette Paper Company, Division of Crown Zellerbach Corporation at Camas, Wash., was recently adjudged an award of $165 for a suggestion of more efficient handling of paper bags. He presented the suggestion while working as a bag-shipping clerk.

A $50 award went to Johnny Green of the laminator and craper for his suggestion on laminating which reduces the cost of installations. These awards were made at the first sub-foreman's meeting in October.

Sidney Roofing Building Machine Room

● Sidney Roofing & Paper Company is building a new paper machine building at its Victoria, B. C., plant. The job will cost about $46,000 and dimensions are given as 50 by 225 feet.

The structure will have concrete floors and a steel truss roof covered with a composition material manufactured by the Sidney company. J. Graham Johnson is architect.



POWELL RIVER'S PIPE BAND which started on a months' goodwill tour September 27th, making appearances at San Francisco, Los Angeles, El Paso, Houston, Corpus Christi, San Antonio, Fort Worth, Amarillo, Dallas and Tulsa.

GUS OSTENSON, Paper Mill Superintendent, Crown Willamette Paper Co., Division of Crown Zellerbach Corporation, Camas, Washington.

Gus Ostenson Named Camas Superintendent

● Gus Ostenson, formerly assistant paper mill superintendent, has been promoted to the position of paper mill superintendent in the Crown Willamette Paper Company, Division of Crown Zellerbach Corporation at Camas, Washington, to succeed his late brother, H. E. Ostenson. He has charge of 12 paper machines.

Mr. Ostenson started working on the paper machines as a broke hustler, then worked as a back tender, machine tender, boss machine tender and as assistant superintendent; making a total of 20 years on the paper machines.

Ostenson was born in Camas of a paper-making family and was reared in the Camas neighborhood. He is now a member of the city council of Washougal and is one of the school directors.

For the past eight years Gus Ostenson has lectured on paper machine operation before the classes of the Camas Paper School.

Natwick and Goodwin Bring Back Fish-Stories

●A. G. "Buff" Natwick, assistant manager of the Crown Willamette Paper Company, Division of Crown Zellerbach Corporation at Camas, Wn., and Tom Goodwin of the control department, recently took a week's vacation. As they intended spending the week fishing at Celilo Falls on the Columbia River above The Dalles, the preceding week was spent taking orders from the men around the Camas pulp and paper plant for Celilo salmon.

As concerned the fishing trip itself, the Pacific Pulp and Paper Industry received several "official" versions. Two of the variations are here presented.

Upon reaching the Celilo falls the men spent much of their vacation time just enjoying the abundance of nature, as the fish were plentiful. This was "proven" by the fact that two large salmon were brought home to Camas from the fishing trip.

From another source which is generally reliable comes information that the men on the fishing trip spent the whole week fishing without so much as a single bite. Rather than return empty handed to Camas it was decided to trade all of the grub left in the "stake" to a couple of squaws for some fish—the squaws had had more successful fishing.

Anyway "Buff" did return claiming to be the "best fisherman of Skamania County." In addition to that he has documentary proof in the form of a duly sworn, signed and notarized certificate that the fish were caught by members of the Camas fishing party, but the witness signees were both Indians, Mr. No Seeum and one of his younger cohorts.

Japs Still Buying B. C. Hemlock Logs

● Although the Canadian timber controller has extended the embargo on export of British Columbia Douglas fir logs for another two months, as from October 10, Japanese buyers continue to buy hemlock logs in British Columbia for pulp purposes.

Difficulty in obtaining sufficient ships has handicapped the business during the past few weeks and in early October two vessels booked to load hemlock in B. C. ports were ordered diverted to the United States to take on scrap iron instead to beat the embargo deadline estblished by the United States.

It is understood that about 40,000,000 feet of hemlock remains to be shipped under order to Japanese interests, understood to be Nisso Paper Company and Canada Timber Company.

Jack Savage Recovering From Operation

●Jack V. Savage, sulphite superintendent at Camas, underwent a serious operation on October 7th at the St. Vincent's Hospital, Portland. He is reported to have come through the operation in good condition and is expecting to be back on the job about the first of November .

Coolidge and Tomczak Visiting Coast

●Harry H. Coolidge, vice president and mill manager, and S. E. Tomczak, sulphite superintendent of Flambeau Paper Co., Park Falls, Wis., were visitors at a number of Pacific Northwest pulp and paper mills in early October.

Olson On Vacation In East

●A. W. Olson of the Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wn., is away on a three weeks' vacation, during which time he will visit in the East and will return to the Pacific Coast in a new automobile, which he will pick up while back there.

Hawley Team Wins Softball Championship

● The Hawley Pulp and Paper Co. softball team of Oregon City won the local championship last month by defeating the Elks team. On the week following the finals a banquet was held for the Hawley team at the Aero Club in Portland with about 30 men attending.

The banquet was provided by Carl E. Braun, vice president and mill manager of the Hawley Pulp & Paper Co. Early in the season Mr. Braun promised a dinner for the Hawley team if it were to win the league championship. They took him up on his offer, winning the finals and the championship by defeating the Elks two straight games.

A trophy emblematic of the championship was accepted from the league President, Frank Vessey, by Harry Fromong, manager of the winning Hawley team. Fromong in turn presented the cup to John H. Smith, president of the Hawley Pulp and Paper Company.

At the end of the first half of the season the Hawley team was at the bottom of the league. It was then Fromong took the active management of the team which has since come into its own.

HARRY FROMONG, manager of the Hawley champion softball team, receiving congratulations from JOHN H. SMITH, President, Hawley Pulp & Paper Co. Apparently LES TAYLOR and HANS MENZI, Jr., are assisting Harry in presenting the trophy to President Smith.

Left to right, HARRY FROMONG, LES TAYLOR, Johnson-Lieber Co., Portland; HANS MENZI, Jr., Vice President, Menzi & Co., Manila, P. I.; and JOHN H. SMITH.

Tappi Discusses Stock Preparation, Wire Life Measurement

THE first of the 1940-1941 series of dinner meetings sponsored by the Pacific Section of TAPPI was held at the Heathman Hotel in Portland on the evening of October 8th

More than 80 men were present including a number of those attending the Paper School at the Camas mill of the Crown Willamette Paper Company, Division of Crown Zellerbach Corporation.

Pacific Section Chairman Fred W. Olmsted presided. He announced that the first paper entered for the 1940-1941 Shibley Award would be presented and that the Executive Committee of the Pacific Section had recently decided to change the basis for selecting the best paper presented during the year.

The new basis will include two points. Value to the industry will count for 60 per cent, and manner of presentation will count for 40 per cent. In previous years a third factor has been considered, the reception of the paper and the discussion provoked. In practice, said Mr. Olmsted, this has not proved sound for it depends upon the type of audience. If the paper were on a pulp subject and the majority of the audience was primarily interested in paper the reception would not be as good nor as much discussion provoked as would be the case of a talk on a papermaking subject to a papermaking audience.

At the TAPPI Dinner Meeting in Portland, October 8th. ROBERT T. PETRIE, Portland, Pacific Coast representative of the Black-Clawson Company, Shartle Brothers Machine Co., and Dilts Machine Works; and, EDWARD M. ROOT, Dilts Machine Works, Inc., Division of the Black-Clawson Co., Fulton, N. Y., who presented a paper, "Stock Preparation, The Hydrafiner vs. the Beater."

MILTON J. FRANKLIN, Presented a paper on wire life measurement.

The next dinner meeting will be held on Tuesday evening, November 12, 1940, at the Hotel Monte Cristo, Everett, Washington. The program will be announced later. It will probably include two speakers, one presenting a paper for the Shibley Award.

Mr. Olmsted introduced the first speaker, Edward M. Root of the Dilts Machine Works, Fulton, New York, Division of the Black-Clawson Company. Mr. Root's paper, "Stock Preparation, The Hydrafiner vs. The Beater," is published in this issue.

The second paper, entered in the contest for the Shibley Award was offered by Milton J. Franklin, laboratory assistant at the Camas mill of the Crown Willamette Paper Company, Division of Crown Zellerbach Corporation. His subject was, "The Measurement of Wire Wear and Wire Life."

Lengthy discussions followed the presentation of each paper.

An unanimous vote of thanks was given to Ray Smythe who made the arrangements for the Portland dinner.

The following men attended the first Pacific Section dinner meeting held in Portland, Oregon, on October 8th:

- Crown Willamette Paper Co., Division of Crown Zellerbach Corporation, Camas, Washintgon: **Chester Beals, Thomas F. Burford, Frederick Covell, J. D. Darby, M. J. Franklin, Harry W. Glenn, W. F. Holzer, Henry Jacobsen, Gus Jacoby, Dorsey E. Lowther, Otto Michaelis, A. G. Natwick, George Nelson, F. A. Olmsted, Gus Ostenson, Herbert Wymore.**

Crown Willamette Paper Co., Division of Crown Zellerbach Corporation, Lebanon, Oregon: **P. T. Dickie, Lauren A. LaFond, Ross F. O'Brien, Frank Smith, R. D. Waddell.**

Longview Fibre Company, Longview, Washington: **William W. Clarke, H. J.**

NEXT TAPPI DINNER MEETING

Will be held at the Monte Cristo Hotel in Everett, Washington, at 6 p.m. Tuesday evening, November 12th.

Two papers will be presented, the titles to be announced later.

Drew, L. C. Ewing, Carl Fahlstrom, Herman Hoehne, M. H. Norton, Rex H. Russell, W. J. Shelton, A. P. Siebers, Harold C. Wall, R. P. Wollenberg.

Pulp Division, Weyerhaeuser Timber Company, Longview, Washington: **Leslie L. Anderson, George H. Beisse, M. L. Edwards, D. C. Greeley, W. H. Haverman, Lyal Jones, Norman Kelly, G. H. McGregor, T. H. Moran, O. P. Morgan, Morris M. Peterson, L. E. Stevenson, Preston Varney, Edward P. Wood.**

Columbia River Paper Mills, Vancouver, Washington: **T. H. Grant, Clyde Lieser, M. Norwood.**

Hawley Pulp & Paper Co., Oregon City, Oregon: **A. Ward Tedrow, Vernon L. Tipka, Cecil L, Triplett, C. Sholderbrand, Fred J. Weleber.**

Oregon Pulp & Paper Co., Salem, Oregon: **Donald Erickson, E. D. Rich.**

St. Helens Pulp & Paper Co., St. Helens, Oregon: **Max R. Oberdorfer.** Pacific Pulp & Paper Industry, **Louis H. Blackerby, Portland; Harlan Scott, Seattle;** Electric Steel Foundry Company, Portland, **Robert A. Bremner, H. H. Richmond, Jack Wilcox;** Morden Machines Co., Seattle, **Darrah Corbet;** Gillen-Cole Co., Portland, **S. Norman;** Hooker Electrochemical Co., Tacoma, **T. E. Moffitt;** Hercules Powder Co., Portland, **J. V. B. Cox;** Pennsylvania Salt Mfg. Co. of Washington, Tacoma, **Brian Shera;** Great Western Division, The Dow Chemical Co., Seattle, **Fred Armbruster;** The Dicalite Co., New York City, **H. W. Hall;** Northwest Filter Co., Portland, **Barton W. Sawyer.**

Dilts Machine Works, Fulton, New York, **Edward M. Root;** Black-Clawson, Shartle & Dilts Machine Companies, Portland, **R. T. Petrie;** The Flox Co., Portland, **Otto L. Hudrlik;** Brown Instrument Co., Portland, **Robert W. Martig;** Rice, Barton & Fales, Inc., Portland, **Ray Smythe;** Scientific Supplies Co., Portland, **H. L. Rudow;** General Dyestuff Corp., Portland, **R. M. True;** Appleton Wire Works, Inc., Portland, **Walter S. Hodges.**

Camas Mill Dedicates Fish Screen

● The Crown Willamette Paper Company Division of Crown Zellerbach Corporation, Camas, Washington, held dedication ceremonies the last of September when the new rotary fish screens at the mill ditch headgate were officially put into operation.

A. G. Natwick was master of ceremonies at the dedication. A large group of sportsmen, mill and game department officials attended the official opening. J. E. Hanny, manager of the Camas mill, gave a talk, explaining how the paper mills cooperate with the game department whenever possible. Claude Snider of the game commission lauded the company for its exceptional cooperation and further explained the need of the fish screen to protect the fish. Clarence Potzke, bacteriologist of the state game department revealed plans to plant 10,000 cutthroats in Lake Lackamas before winter.

The fish screens are located above the company dam; the screens are built between concrete wing-walls and are operated by an electric motor. The screens are 10 feet wide, 15 feet in diameter and are made of 12-guage, 3-mesh galvanized screen. They operate with a surface of 5 feet per minute. A capacity of 150,000,000 gallons of water can be passed through the screens in 24 hours.

J. E. Whitfield, director of the Washington State Sportsmen's council threw the switch to put the new screens in operation.

The company provided a luncheon for the guests at the Crown Willamette Inn following the dedication.

Weyerhaeuser Installing Vaughan Deckers

● The Everett Mill, Pulp Division Weyerhaeuser Timber Company, producer of unbleached sulphite pulp, has recently installed five Vaughan deckers in the screen room. The cylinders are constructed entirely of stainless steel and the vats are of Wolmanized fir.

The deckers were manufactured by the Vaughan Motor Works of Portland, Oregon.

Hawley Installs Two Machine Hoods

● A new asbestos hood was put on the No. 1 paper machine at the Hawley Pulp and Paper Mill, Oregon City, early in October. At the present time an asbestos hood is being put on the No. 3 machine.

The new equipment was designed and fabricated by Drew & Hoffman, ventilating engineers of Portland.

A CONTRIBUTION TO BETTER FISHING said the Camas-Post Record of the installation of the rotary fish screen at the outlet of Lake Lackamas, reservoir for the Camas, Washington, mill of the Crown Willamette Paper Co., Division of Crown Zellerbach Corporation.

In the top picture J. E. HANNY, Mill Manager, is speaking at the dedication ceremonies September 28th. On his right is A. G. "BUFF" NATWICK, Assistant Mill Manager, who acted as master of ceremonies. At the extreme right is CLARENCE POTZKE, chief biologist of the Washington State Game Department. On his right are TITUS BUTLER, president of the local Wild Life League; CLAUDE SNIDER, game commissioner, and J. R. FRUM, Assistant Vice President, Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Portland. Photos by the Camas Post-Record.

Trade Talk

of Those Who Sell Paper in the Western States

Vernon Scott Dies in Portland

● Vernon Scott, president of the Packer-Scott Paper Company of Portland, Oregon, died in a hospital on September 10th following a heart attack. He had been active in business until two weeks before although his health had been poor for two years.

Mr. Scott was born on a Nebraska farm in 1886 but had lived in Portland since childhood. For many years he was a salesman with the old Crescent Paper Company until he and C. M. Packer founded the business that bears their names in 1920.

He was active in the affairs of the Portland Chamber of Commerce, and held membership in the Elks and Masonic lodges. Surviving relatives include the widow, Lucille, and two small children, Joanne, 6, and Vernon, 4; a sister Katherine Scott of Salem, and a brother Dr. J. Vinton Scott, Salem.

Printing Supply Salesmen's Guild Formed in S. F.

● San Francisco paper mill representatives and paper salesmen are playing a big part in the organization of the Printing Supply Salesmen's Guild of San Francisco.

The organization is patterned after such guilds in Chicago, New York, and other cities. There have been several luncheon meetings held by small groups of San Franciscans, and at the last luncheon a committee of five were selected to organize the guild. They were: Harry Porte, Pacific Coast manager, Mergenthaler Linotype Co., chairman; C. M. Reed, president, California Ink Co.; Hi Farnsworth, San Francisco manager, American Type Founders Co.; Bud Griffin, Griffin Bros.; and D. D. Miller, Pacific Coast manager, West Virginia Pulp & Paper Co.

The committee has been delegated to advise all supply houses of the formation of the guild and that two members of each supply house are eligible for membership. The committee will act as a steering committee until permanent officers are elected in January.

The purpose of the guild is to foster better understanding between sales managers and salesmen who are daily contacting the printing trade.

Paper Distributors' Margins Narrower

● Despite an increase in total sales volume by paper merchants in recent years, gross profit margins have been sliding downward, P. W. Lesh, president of the National Paper Trade Association, told members of that organization at the recent meeting in Chicago.

Mr. Lesh commented on the results of the association's mid-year survey covering representative merchants of fine paper and wrapping paper throughout the country. During the first six months of 1940 there was a decided tendency toward shrinkage margins, he said, notwithstanding a gain of more than 6 per cent in fine paper sales and 12 per cent in heavy paper sales.

Improvement in earnings capacity which has come to paper manufacturers and other lines of business has not materialized for paper distributors, the association's survey indicated. Attainment of a reasonable profit, it was pointed out, must come not from increased sales but from more profitable transaction of present volume through an increase in gross margins or a decline in expenses.

Blake Employees Hold Big Picnic

● Repeating the great success of last year's event, the annual picnic of the Los Angeles branch of Blake, Moffitt & Towne was held at Brookside Park, Pasadena, Saturday, Sept. 21, with the entire organization and their families and friends turning out. No careful census of the clan was taken but estimates placed the number at approximately 270.

General chairman of this year's party was Wm. G. Kullick, assisted on the general committee by Billy Myers, who was master of ceremonies at the dinner, Eleanor Secrist, Mildred Swazara, and Helen Calamia, and heading up the athletic committee was Jerry White, assisted by George Jessup, Al Wagoner, and Charles Wagoner.

Games and contests featured the day. First place in the golf tournament went to H. R. Kernberger with Wm. Taube, runner-up. The sausage eating contest went to E. G. Tyra, although L. C. Cooney and Don E. Edmon were believed to have been runners-up if they hadn't been handicapped with rubber sausages. R. L. Simpson was thrown by the bull in the bull throwing contest, but Robt. Toohey mastered the beast and won the title of best bull thrower.

At noon a fine meal was served with barbecued beef as the main entree. Games and contests were held all day and the party broke up at sun down with everybody tired but happy.

BLAKE, MOFFITT & TOWNE employees in Los Angeles attend a big picnic at Brookside Park

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Ingram Back From Tour of Orient

● Donald Ingram, president of the Ingram Paper Co., Los Angeles, compelted a nine weeks' tour of the Orient the latter part of September. Mr. Ingram was accompanied by his two sons, Jack, 17, and Donald, 15. Their travels took them to the Hawaiian Islands, the major cities of Japan, Manchukuo, north Peking and Tientsin, Korea, and back to Japan again.

Mr. Ingram noted the universal desire among the Japanese people to maintain peaceful and friendly relations with the United States. The strain from the war with China he reported was evident generally. The Japanese in their occupation of Chinese territory have brought many progressive developments, he stated, such as schools, modern hospitals, roads, and have brought about sanitation which did not exist prior to their entry.

On returning to the United States, Mr. Ingram's older son, Jack, entered Stanford University. He, like his father, is an excellent golfer and and will enter actively into the university competition.

General Employees Join Zellerbach Paper

● At the cessation of operations of the San Francisco Division of the General Paper Company, the following employees joined the Zellerbach Paper Company, San Francisco Division:

Carson Mathews, Joe Colton, Julius Kaufner, John Bordi, Bob Lesser, Edith Becker, J. F. Collins, Myrtle Roesch, and Joseph Dwyer. Ed Walthers, former manager, is working out of Headquarters Division, Zellerbach Paper Company.

Bonestell Appointed Agents For Brown Paper Goods

● The Brown Paper Goods Company, Los Angeles, has appointed Bonestell & Company, San Francisco, exclusive distributors for Northern California for the entire line of specialty bags, cocktail napkins, and other items which they manufacture.

Bonestell & Company has added four salesmen to its sales staff recently. Some are stationed in San Francisco, and some have an outside territory.

● In presenting their 17th poster in what they have called their "Reminder Selling" series, the Zellerbach Paper Company follows the trend of the moment with a striking patriotic theme.

These posters, designed to help the printer emphasize the importance of his profession and incidentally build business, are an altruistic form of advertising because the name of the Zellerbach Paper Company does not appear on the production. We have reproduced their latest offering, "Printing Speeds National Defense," because it emphasizes the tremendous part that paper and printing play in this vital work.

The poster was conceived and created by Alfred Owles, who has won a national reputation for his fine drawing of planes and aviators.

Pope Visits In California

● Jack Pope, formerly the San Francisco representative of the Everett Pulp & Paper Company, but now connected with the Patten Paper Co., Honolulu, T. H., was visiting with old friends on the mainland last month.

Paterson Furnishes Scrolls For Exposition Employees

● When the 2,900 employees of the Golden Gate Exposition on Treasure Island were signed off, with the closing of the Fair Sept. 30, they were presented with handsome scrolls, each one with the name of the individual to whom it was presented at the top, in appreciation of their loyalty and service.

The scrolls were made of Paterson Parchment Paper Company 260 Parchkin, and were 8x11½ inches in size. They were a four-color job, and officials of the Paterson Pacific Parchment Company point out that the four colors were laid only two hours apart. The job, from the time it was ordered until delivered to the employees took only three days.

The large scrolls presented by the Golden Gate Exposition to the people who loaned more than $1,000 to the Fair, were also made out of Paterson Parchkin.

Two interesting envelope stuffers are being produced for fall advertising for Paterson Parchment Company products. The first one is a handsome two color job, pointing out that Patapar "prevents these wrapper troubles—Leaks, Grease Spots, Fuzzy Fibres, Odors, and Dull Appearance.

Kelly Didn't Get His Deer

● R. L. Kelly of General Paper Company, Los Angeles, didn't have his usual good hunting this year when deer season opened. For a number of years he has always brought home his venison steak. Whether it was because this is an election year or it was the heavy blasting in the Huntington Lake region where the hunters were that kept the bucks away isn't known. C. E. Dempsey of the same company and F. B. Swanson were in the party.

Blackley of Beveridge On Pacific Coast

● William J. Blackley, vice-president of the Beveridge Paper Company, Indianapolis, Ind., was visiting the trade on the Coast last month.

on September 21st. More than 270 were present.

Comparative Evaluation of the Different Methods of Dirt Count of Pulp

by ALAN P. ADRIAN and JOHN H. GRAFF*

Abstract

The value of a pulp depends to a large extent upon the relative number and the area of dirt specks or foreign materials present in the pulp; therefore, it is of importance that the method used for determining these dirt specks be standardized in such a manner that the dirt count made by the producer and by the buyer of the pulp is comparable.

The problem suggests two methods of approach: a laboratory method where the total number of specks per gram of pulp and accurate micrometric measurements and qualitative analyses of the specks are made, and a mill method for checking the dirt count during the manufacturing operation. Both methods to be reproducible must use speck counting boxes with transmitted illumination, and the type of light and the distance of the lights from the sheet, as well as the height of the eye point above the sheet, must be standardized. The reports must be made in such a manner that information is obtained about the relative number of specks in a given unit weight of pulp, the frequency distributions of the average square areas, and kind of specks present, so that the nature and source of the most objectionable specks can be determined.

ONE of the factors which determine the relative value of a pulp is the amount of dirt or foreign material present in the pulp, which can be determined by the so-called speck count. However, a standard reproducible method as free as possible from errors and variations has not been agreed upon, and large variations in the speck counts made by the producer and those made by the purchaser of a given pulp often occur.

Although there are many references in the literature to the analysis of specks and dirt in pulp and paper, there are only a few methods mentioned for systematically obtaining a dirt count of pulp. These are [1]the Clark method, now a TAPPI tentative method; [2]the Graff methods for handsheets and drier sheets, respectively; and [3]the method of Simmonds, Billington and Baird.

The problem lends itself to two methods of approach: a labortory method by which, as far as possible, the exact number, area, and kinds of specks per gram of pulp can be determined; and a method which can be used as a continual check during the manufacturing operation. If this latter method also gave an idea of the relative area and kind of specks present, it would be a much better method.

Laboratory Control Method

● In developing a laboratory method which is reproducible and as free as possible from experimental and personal errors, the following points should be considered: the method of preparing the handsheets, such as sampling, disintegration, basis weight, and pressing of sheets; the type of light box used, including type of illumination, distance of illumination from the sheets, and the height of the eye point above the sheet; the number of sheets to be counted for the least possible probable error in proportion to the time used; the frequency distribution of the relative area in square millimeter of the specks; and the kind of specks predominant in each area.

Graff's Method — Approximately 50 grams of airdry pulp, or its equivalent of moist or wet stock, are placed in a two-gallon earthenware jar, previously rinsed with distilled water to which 6 liters of distilled water are added. The stirring blade of the distintegrator is lowered into the water and the top of the jar is covered with a clean wet cloth cut to accommodate the shaft of the disintegrator. The mixture is agitated for 20 min. with a 1.75-inch blade at about 2000 r.p.m.

In preparing the sample sheets, the pulp suspension is stirred with a glass rod and 150 cc. are transferred to a 5.5-inch Buchner funnel fitted with a felt previously rinsed with water. Eight sheets are prepared and placed one on top of the other separated by felts. The sheets are wrapped in clean white paper, pressed for 2 min. in a one-ton press, and, still wrapped, transferred to the darkroom where the number of specks are counted in a light box, as shown in Figure 1. This box is illuminated by four 50-watt lamps placed in a vertical position resting on the bottom of the box with the sockets 5.5 inches apart. The bulbs are of milky glass and are tipless. A ground-glass plate, smooth side up, is placed above the lights. A shield of heavy black paper, with a circular opening a little larger than the diameter of the sheet to be examined, is used to avoid the glare of the lights. A head or chin rest is used so that the eyes may always be a standard height above the sheets.

Each sheet in turn is placed over the ground glass plate of the light box, and each visible particle of foreign material is encircled with an indelible pencil. The sheet is then turned over and any particles visible from the other side of the sheet are encircled in the same way, making a note on the sheet as to the total number of specks found. When each sheet of the set has been examined in this way, the set is transferred to a drying oven and allowed to remain for 35 min. at 165° F., whereupon the dry sheets are weighed to the nearest tenth of a gram. The total number of specks found in all eight sheets, divided by the weight of the set, equals the speck count per gram of pulp.

The variables in this method—time of stirring, basis weight, types of light, distance of light source, height of eye point, and number of sheets needed for minimum error—were checked one at a time, always employing the previously selected conditions in obtaining data on the factors investigated; eight speck sheets were used for each individual set of counts; a softwood unbleached sulphite pulp was used throughout the work.

Time and Speed of Stirring—Continued stirring beyond complete disintegration of the pulp does not affect the average number or areas of the specks to any great extent; the type of stirrer used also has no effect.

Basis Weight—As the sheet became thicker it transmitted less light, therefore, the particles counted decreased. From the data in Table I, it appears that, at the lower limits of basis weight, the counts approach a constant value, and, as a sheet of 31-lb. (24x36—500) is too thin to handle and a sheet of 37-lb. gives the same count and may be handled conveniently, this was taken as the standard basis weight of the sheets.

TABLE I
Effect of Basis Weight on Dirt Count

Basis Weight	Dirt Count per Ovendry Pulp 1	2	3	4	Average
31	54.9	54.5	55.0	52.0	54.1
37	52.0	52.5	55.8	56.0	54.0
47	55.0	48.0	52.0	50.5	51.4
74	48.2	48.8			

*Presented at the Fall Meeting of TAPPI in Seattle, Washington, August 20-23, 1940. A portion of a thesis submitted in partial fulfillment of the requirements of The Institute of Paper Chemistry for the degree of Master of Science from Lawrence College, Appleton, Wisconsin, June, 1940.

Alan P. Adrian is a graduate student, The Institute of Paper Chemistry, and John H. Graff is a member of TAPPI and Research Associate, The Institute of Paper Chemistry, Appleton, Wisconsin.

Type of Light—For the investigation of the influence of the color of the light used, squares of blue, pink and red cellophane were successively placed under the ground glass plate, using 50-watt white bulbs and 60-watt daylight bulbs without cellophane. Two counts of eight sheets were made in each case. The results are shown in Table II. Because the daylight bulbs and ordinary light bulbs with pink or blue cellophane increase the dirt count, the 60-watt daylight bulb was selected as a standard.

Distance of the Light Source from the Sheets—With the basis weight of the sheets and the best type of lights to be used having been determined, it was next necessary to determine the distance from the top of the light bulbs to the underside of the glass. These results are shown in Table III and show that the dirt count increases as the distance of the light source decreases but levels off after a certain distance is reached.

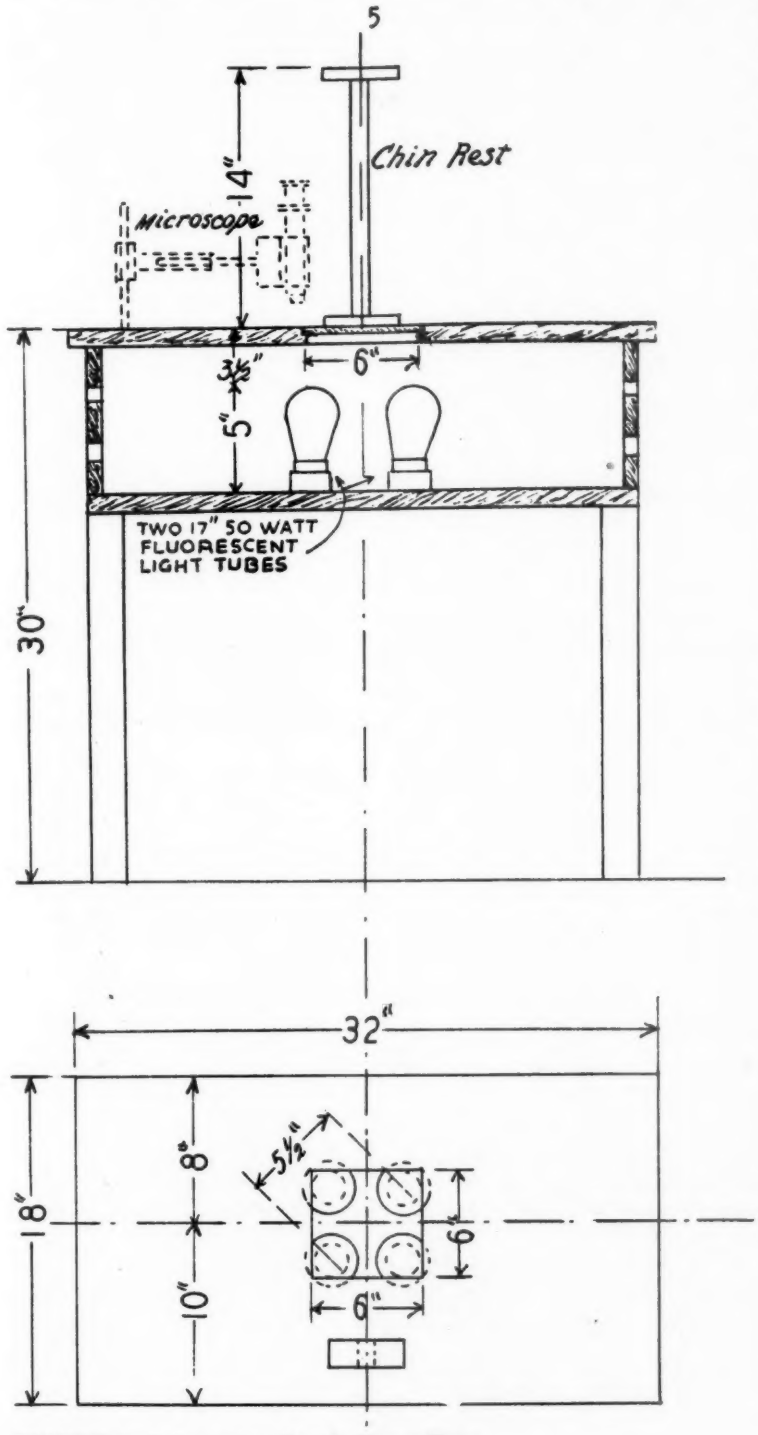

FIGURE 1. Laboratory Speck Count Box.

Height of Eye Point and Number of Sheets for a Minimum Probable Error—Next, the height of the eye point above the speck sheet was standardized. To ascertain the influence of this distance upon the number of specks counted, the number of sheets necessary for a reasonably small probable error was determined and the frequency distribution of the areas in square millimeter of the specks was counted at different heights of the eye point.

To do this the individual speck count per gram of ovendry pulp was determined for 48 sheets at three different heights of the chin rest: 14, 9 and 5 inches. After determining the speck count per gram of pulp for each sheet, eight of these were averaged to give the dirt count of the pulp. The standard deviation (S. D.) for each average dirt count of eight sheets was determined, as was also the standard deviation of the average count of the 48 sheets. In each case the standard deviation was obtained by the equation

$$S.D.=\sqrt{\Sigma\delta^2/(N-1)}. \qquad (1)$$

Having determined the standard deviation of six sets of eight sheets each, the probable error (P. E.) of a dirt count for any number of sheets can be determined by the equation

$$P.E.=(0.6745\ S.D.)/\sqrt{N}. \qquad (2)$$

Table IV shows the average dirt count of the six sets of eight sheets for each level of the chin rest, together with the standard deviation for each set and the standard deviation of the standard deviation at each level. Table V shows the probable error and percentage error for 8, 16 and 24th sheets at each level. The results in Table IV show that the speck count decreases as the eye point increases above the sheet, and Table V shows that the probable error also decreases with the increase of the distance, and that little is gained by using more than eight sheets for an average count. This is also shown in Figure 2.

To determine the frequency distribution of the square areas of the specks at each level, the long and the short diameters of from 105 to 200 specks were determined micrometrically and arranged as shown in Table VI; from these data, frequency curves were drawn, as shown in Figure 3. The data in Table IV show that the speck count decreases with the increase of the height of the eye point or chin rest, but, as is shown in Figure 3, the square area of the specks counted increases with the height of the eye point and, as the larger specks in pulp are more important than the almost invisible specks, the 14-inch chin rest was adopted as the most suitable height.

As the square area of the specks was determined, the spekcs for one of the sets were analyzed and arranged, as shown in Table VII, from which it can be seen that the inner bark and the shives constitute the major portion as well as the largest and most objectionable specks in this pulp[1].

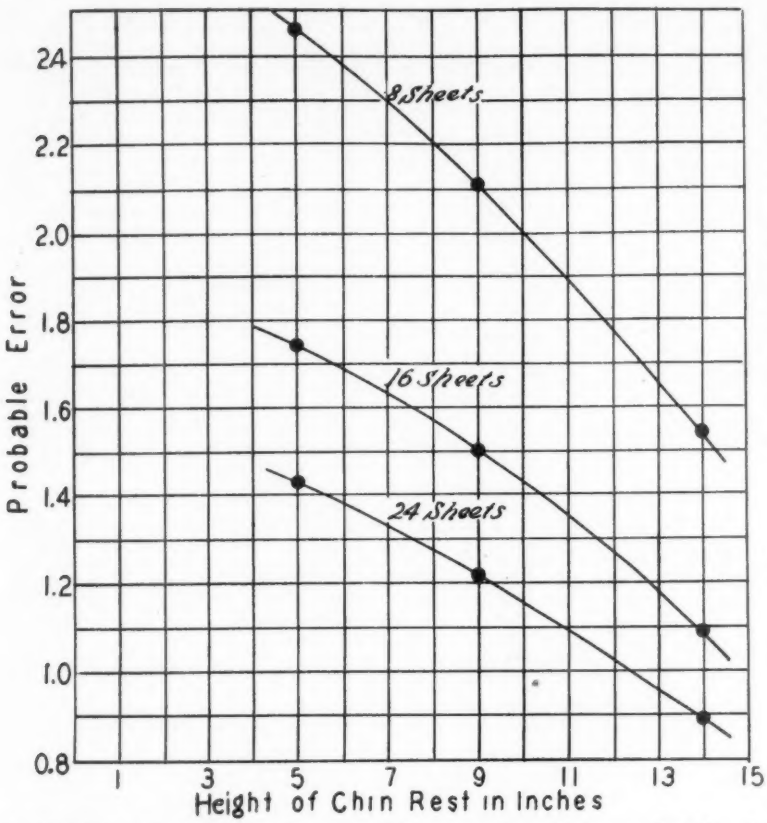

FIGURE 2. Probable errors of speck counts in relation to height of chin rest.

TABLE II

Influence of Type and Color of Light on Dirt Count

Type of Light	Dirt Count per Gram of Ovendry Pulp 1	2	Average
Four 50-watt White	51.2	54.9	53.0
Pink Cellophane	57.8	54.5	56.1
Red Cellophane	40.3	38.6	39.4
Blue Cellophane	60.5	58.9	59.7
Four 60-watt Daylight	58.6	60.5	59.5

TABLE III

Influence of Distance of Light Source on Dirt Count

Distance of Light Source in Inches	Dirt Count per Gram of Ovendry Pulp 1	2	Average
3.5	58.6	60.5	59.5
6.0	61.8	58.8	59.8
12.0	48.2	48.2	48.2
18.0	43.0	41.7	42.3

Simmonds, Billington and Baird Method[2]. A light box similar to the one used in Graff's method is used, with the exception that the ground glass plate is 8 by 10 inches and ruled into one-inch squares mentally numbered from 1 to 80, and a wide field microscope, giving a 10-diameter magnification and fitted with an eyepiece micrometer, is used for determining the long axis of the specks.

Four 5 by 7-inch sheets, having a basis weight of 45 to 55 lbs. (24x36—500), are placed on the upper left-hand corner of the illuminated ground glass. The particles observed in areas corresponding to 1, 16, 24, 32 and 46 of the ground glass are counted and measured. No mention is made as to whether a wet or dry sheet is used. The measurement of the longest axis of the speck is considered as its diameter, and the particles are classified as follows:

Specks—
- Number between 0.15 mm. and 0.5 mm. (small)
- Number larger than 0.5 mm. (larger)

Shives—
- Number between 0.15 mm. and 1.0 mm. (small)
- Number larger than 1.0 mm. (large)

Threads—
- Number between 0.2 mm. and 2.0 mm. (small)
- Number larger than 2.0 mm. (large)

After the specks in the four sheets have been counted and measured, the ovendry weight of the sheets is determined and the dirt count is reported as the number of extraneous particles per pound, both as total and classified according to class groups by the equation

$$D = 7\,n/W \qquad (3)$$

where D is dirt count per pound, n is the number of particles, and W is the total weight of the specimen in pounds.

Fifty-lb. sheets (24x36—500) were made on a Valley sheet mold and cut to 5 by 7 inches. A number of sets of four wet sheets each were examined with the bottom of the ground glass 3.5 inches above the top of the light bulbs (four 60-watt daylight bulbs) and a chin rest 15 inches above the sheets. Counts were made on Squares 1, 16, 24, 32 and 46. Then the same squares on the opposite side were counted by turning the sheet over and placing it in the upper left-hand corner, so that Square 41 coincided wtih Square 1 on the first side, thus counting the specks in Squares 6, 12, 34, 46 and 41. These results are shown in Table VIII.

TABLE IV

Influences of the Height of the Chin Rest

5-inch Level				9-inch Level				14-inch Level			
Dirt Count per g. of O.D. Pulp	S.D.	δ	δ^2	Dirt Count per g. of O.D. Pulp	S.D.	δ	δ^2	Dirt Count per g. of O.D. Pulp	S.D.	δ	δ^2
111.00	10.30	0.14	0.02	75.70	7.64	0.92	0.85	59.10	7.26	1.04	1.08
107.50	12.70	2.54	6.50	72.80	11.85	3.29	10.80	61.60	5.87	0.35	0.12
108.00	9.24	0.92	0.85	76.40	10.00	1.44	2.10	62.00	4.70	1.52	2.32
113.00	10.00	0.16	0.03	69.60	6.60	1.96	3.85	62.20	6.13	0.09	0.01
108.70	11.40	1.24	1.55	75.00	9.15	0.59	0.35	61.00	7.72	1.50	2.25
103.30	7.32	2.84	8.10	76.50	6.14	2.42	5.90	61.90	5.65	0.57	0.33
Ave. 108.6	10.16			74.40	8.56			61.30	6.22		
$\Sigma\delta^2$			17.05				23.85				6.11
	S.D. of S.D.=1.84				S.D. of S.D.=2.18				S.D. of S.D.=1.10		

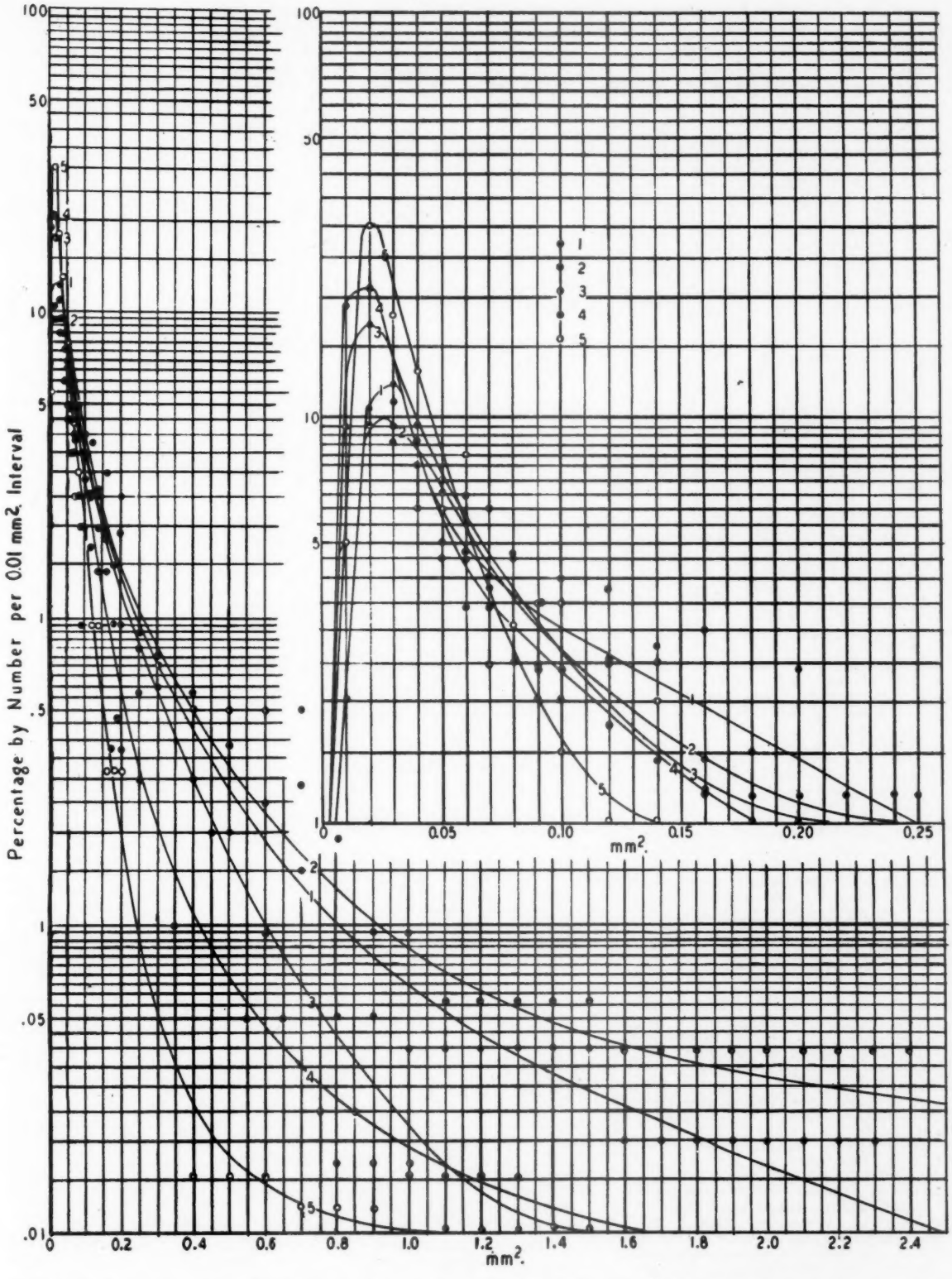

FIGURE 3. Frequency distributions of speck areas at different heights of chin rest.

TABLE VI

Area Frequency Distribution of Specks Counted at Various Eye Levels

Range (mm.²)	14-inch Level 198 Specks		14-inch Level 105 Specks		9-inch Level 200 Specks		5-inch Level 200 Specks		Clark's Estimation 200 Specks	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
0.00-0.01	4	2.02	0	0.00	19	9.50	38	19.00	11	5.50
0.01-0.02	21	10.60	10	9.54	34	17.00	42	21.00	60	30.00
0.02-0.03	24	12.10	9	8.56	19	9.50	22	11.00	36	18.00
0.03-0.04	15	7.60	9	8.56	12	6.00	19	9.50	26	13.00
0.04-0.05	9	4.55	7	6.66	14	7.00	10	5.00	12	6.00
0.05-0.06	9	4.55	5	4.76	13	6.50	7	3.50	16	8.00
0.06-0.07	8	4.03	4	3.81	12	6.00	7	3.50	5	2.50
0.07-0.08	9	4.55	6	5.71	5	2.50	9	4.50	6	3.00
0.08-0.09	4	2.02	1	0.95	7	3.50	5	2.50	7	3.50
0.09-0.10	4	2.02	3	2.86	7	3.50	8	4.00	3	1.50
0.10-0.12	10	5.05	8	7.61	10	5.00	7	3.50	4	2.00
0.12-0.14	11	5.55	3	2.86	10	5.00	8	4.00	4	2.00
0.14-0.16	12	6.05	3	2.86	5	2.50	5	2.50	2	1.00
0.16-0.18	6	3.03	1	0.95	4	2.00	3	1.50	0	0.00
0.18-0.20	10	5.05	4	3.81	4	2.00	0	0.00	2	1.00
0.20-0.25	8	4.03	3	2.86	9	4.50	3	1.50	3	1.50
0.25-0.30	6	3.03	4	3.81	7	3.50	1	0.50	1	0.50
0.30-0.40	6	3.03	6	5.71	1	0.50	4	2.00	0	0.00
0.40-0.50	4	2.02	4	3.81	1	0.50	2	1.00	1	0.50
0.50-0.60	5	2.52	1	0.95	1	0.50	0	0.00	0	0.00
0.60-0.70	3	1.51	3	2.86	1	0.50	1	0.50	0	0.00
0.70-0.80	1	0.51	2	1.91	3	1.50	0	0.00	1	0.50
0.80-0.90	1	0.51	1	0.95	1	0.50	1	0.50	0	0.00
0.90-1.00	0	0.00	1	0.95	0	0.00	0	0.00	0	0.00
1.00-1.50	4	2.02	3	2.86	0	0.00	0	0.00	0	0.00
1.50-2.00	2	1.01	2	1.91	1	0.50	1	0.50	0	0.00
2.00- +	2	1.01	2	1.91	0	0.00	0	0.00	0	0.00

The lack of uniformity in these experiments suggested that the sheet should be made in a basis weight of 37-lb. (24x36—500),counting the number of specks in Square 1, 16, 24, 32 and 46. To do this, seven sets of eight sheets each were made up; and, since the method implies that the count is to be made on one side only, and as one may select either side at random, counts were made on five of the seven sets, first using one side of the sheets and then the other side to discover how the counts vary. These results are shown in Table IX.

The fact that very poor checks were obtained in the experiments shown in Table VIII and also in the data given in Table IX indicates that this method leaves much to be desired.

Mill Control Methods—These methods are to be used for continual checks during the manufacturing operation where the number of dirt specks is determined directly from the lap or drier sheets. The method must be reproducible, and as far as possible free from experimental errors and variations of personal judgment, and so arranged that it can be carried out in a minimum of time. The type of light box, kind and position of the illuminant, as well as the height of the eye point of the observer, are of importance. Here, as in the laboratory method, the number of test sheets, the areas and frequency distribution of the different areas of the dirt specks, and kind of specks in each group area must be considered, although to a more limited degree.

Weyerhaeuser Method[3]—A sheet of pulp is taken from the cutter box of the machine every half hour. A 24-by-24-inch sheet is cut from this sheet and is used to determine basis weight (24x36—480). A 12-by-12-inch sheet is cut from the basis weight sample, thoroughly wetted with clean water, and placed on the grid of the Weyerhaeuser count box (See Figure 4). As the specks are counted, they are marked with an indelible pencil. When a count of 100 is reached, a cross mark is made to avoid errors in cases where the count is high. When the specks visible on one side have been counted, the sheets are turned and the specks are counted on the reverse side.

After the count has been made, the sheet is carefully inspected to see that no specks have been missed. The total count on both sides is known as the total number of specks; and to obtain the dirt count in specks per oven dry pound, the following equation is used:

$$D.C. = \frac{(\text{total specks/sq. ft.})\ (480)\ (6)\ (1.111)}{(\text{basis wt.})\ (\text{fraction A.D.})} \qquad (4)$$

where 480 is number of sheets to a ream, 6 is the number of square feet in a 24-by-36-inch sheet, fraction A.D. is the fraction of airdry pulp in the sheet, and 1.111 is the conversion factor—airdry to ovendry.

For the purpose of determining the influence of the type of light used and the distance of this light from the sheet, four 12-by-12-inch drier sheets were counted for each type of illumination with the chin rest at 14 inches above the sheet. These results are given in Table X which shows that the use of the daylight fluorescent tubes results in a higher dirt count. This is probably because the sheets remain moist and the light is more evenly distributed.

In order to obtain an idea of the uniformity of count which might be expected when counting at different eye levels the 14, 9 and 5-inch chin rests, 15 sheets were counted at each level using four 60-watt daylight bulbs at 4.5 inches from the top of the bulbs to the sheet, and two 17-inch, 15-watt fluorescent daylight tubes at 8 inches from the sheet. These results are given in Table XI and Figure 5.

Micrometric measurements of the specks in the sheets and a rough analysis of the same were made with a shop microscope equipped with an eye piece micrometer and attached to the box on a telescopic swing arm, as shown in Figure 4. The specks measured and analyzed were selected as follows: Indelible pencil lines made across the sheet 3 inches from each side and one line was drawn across the middle. Ten specks along each line, making a total of 50 specks, were classified and the long and short "diameters" of each speck were determined and multiplied together to obtain the approximate area in square millimeters. The specks were divided into classes easily recognized without a reagent at a low magnification. The results were reported on a simplified frequency distribution chart typed as shown in Table XII, A and B, B being measurements and classifications of the specks in another sheet of the same pulp for comparison of the relative uniformity of this method. The advantage of this method is that it discloses the nature of the dirt causing trouble from a sales point of view, such as the frequency tabulation, the relative amount and size of the most objectionable specks, and also gives the mill operators an idea where the objectionable specks originated.

TABLE V

Influence of Number of Sheets on Probable Error

Number of Sheets	5-inch Level Dirt Count 109.0 S.D. 10.2		9-inch Level Dirt Count 74.5 S.D. 8.75		14-inch Level Dirt Count 61.7 S.D. 6.4	
	P.E. +	% +	P.E. +	% +	P.E. +	% +
8	2.46	2.25	2.11	2.82	1.54	2.48
16	1.74	1.59	1.50	2.01	1.09	1.77
24	1.43	1.30	1.21	1.63	0.89	1.43

The time required for counting, measuring and classification is less than one-half of an hour, and the tabulation can be made by a typist in about the same time.

Clark's Method[1]—An area of at least 2000 sq. cm. of pulp sheets is required for each test. The pieces comprising the specimen may be any convenient size so that this area may be examined in units having such an area as to give a total of between 20 to 30 readings for each test. The sample sheets are placed on a white background and the dirt particles and the "equivalent black area" of each is estimated by the use of Clark's estimation chart. The equivalent black area of a spot is defined as the estimated area of a spot of dirt in terms of the size of a perfectly black spot which would make the same visual impression against a pure white back-

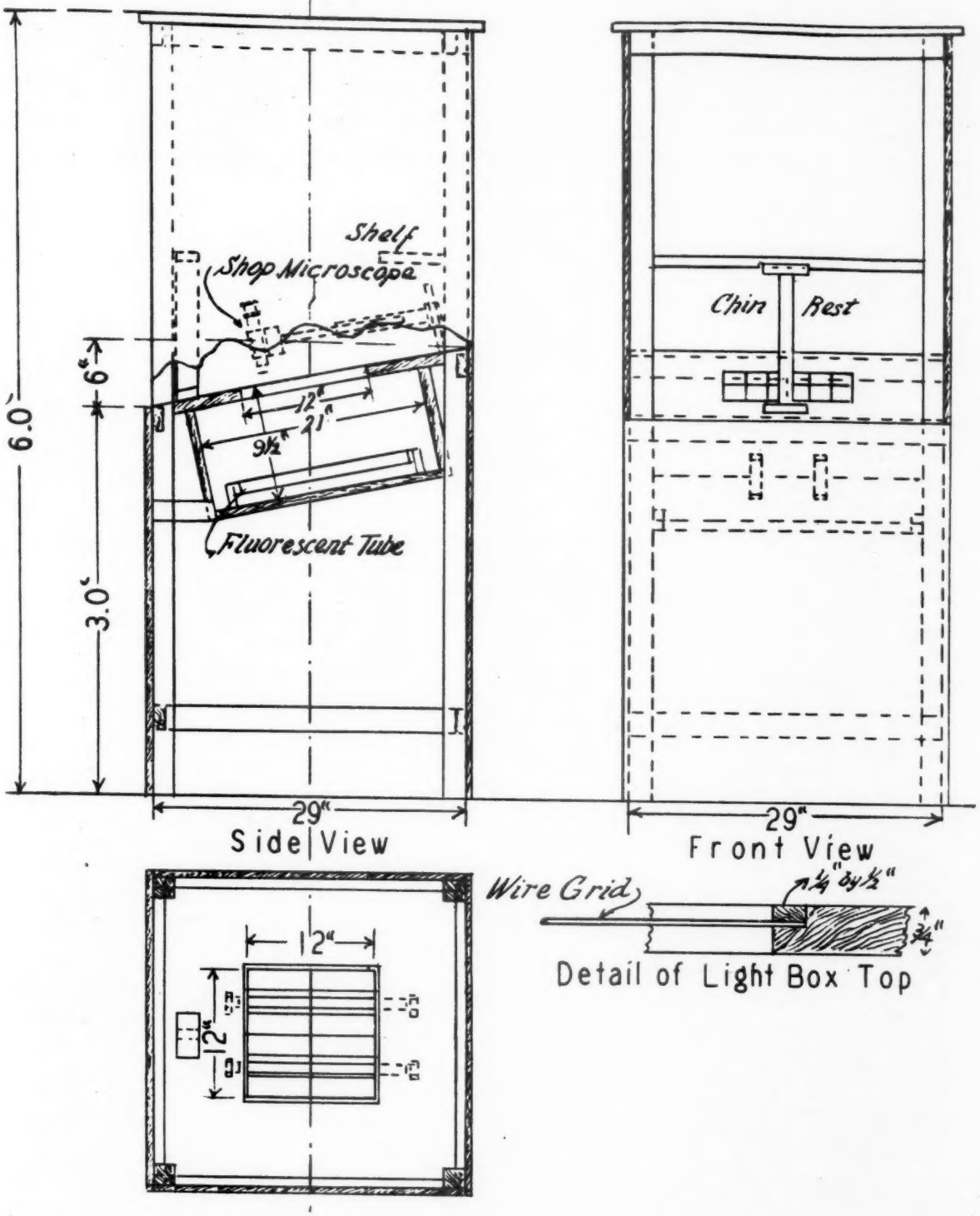

FIGURE 4. Weyerhaeuser speck count box.

ground. Specks with an equivalent black area of less than 0.05 sq. mm. are not reported.

If, after 20 or 30 readings have been taken, any individual reading is more than three times the average, a further set of specimen sheets must be examined to see if it is justified. If not, they are reduced to three times the average and included in the final average. Pieces of dirt obviously unusual should be ignored. Shives which appear to be dirt only when viewed at an angle should not be counted.

The results are reported as equivalent black area in square millimeter per square meter. Only the top or dirtiest side should be reported and results stated in parts per million.

For checking the areas of Clark's chart the circle was chosen as a convenient speck form which could be measured with an eye piece micrometer in all size classifications. The results are shown in Table XIII and Figure 6.

The table and the curves show that the actual values of the specks given in the chart are considerably larger than the given value. However, the chart was used as such without compensating for the innaccuracy.

For the purpose of comparing the evaluation of the relative square areas of specks in pulp determined by the Clark estimation chart and actual micrometric measurements of the specks, wet handsheets like those used for speck count by the Graff method were placed on a glass plate laid over the grid in the Weyerhaeuser box and illuminated from below with the two 17-inch, 15-watt daylight fluorescent tubes, and 200 of the marked specks were compared for size by the estimation chart using a 14-inch chin rest eye level. The results are shown in Table VI and Figure 3, which indicate that the speck size estimated by this method gives a relatively larger number of small specks and a much smaller number of larger specks than those obtained by direct micrometric measurements.

For actual speck count determination of pulp as described by the Clark method, the Weyerhaeuser box was equipped with an overhead 17-inch, 15-watt daylight fluorescent tube for evenly reflected light. Six 12-by-12-inch dry lap sheets were placed over the grid and all the specks were counted, and sizes were estimated with the help of the estimation chart at an eye level of a 14-inch chin rest; separate counts made on both sides (a and b) of the sheet. The results of the counts of these six sheets are shown in Table XIV.

The determination of an "equivalent black area" in pulp in itself not only depends to a large extent upon individual judgment, particularly in unbleached pulp, but it should be remembered that there are many specks which may have a relatively low equivalent black area in the pulp but which have an intense and high equivalent black area when converted into paper. Because it is visually impossible to determine the dirtiest side of a pulp sheet, both sides of the sheet should be counted in determining the actual speck areas of the pulp.

Open Box Method—This method is used with variations in many pulp mills. The method consists in having a light box large enough to take one or two untrimmed drier sheets, covered by window panes the size of the sheets and illuminated with a number of Mazda lamps. The number and wattage of the light bulbs vary, as does the placement

TABLE VII

Analysis of Specks in Handsheets

Key	Kind	Frequency	Area (mm.)²	% Area
IB=inner bark	IB	25	4.0064	13.05
OB=outer bark	OB	2	0.8698	2.83
R=resin	R	40	2.7818	9.07
Sh=Shive	Sh	30	20.5511	66.90
K=knotwood	K	4	2.3505	7.66
D=other dirt	D	1	0.0415	0.14
W=wool hairs	W	3	0.0905	0.35

0-.01	.01-.02	.02-.04	.04-.10	.10-.20	.20-.50	.50-1.0	1.0-+
			R				
			R				
			R				
			R				
			R				
			R	R			
		R	R	R	R		
		R	R	R	R		
		R	R	R	R		
		R	R	K	OB		
		R	R	Sh	K		
		R	R	Sh	Sh		
		R	D	Sh	Sh		
	R	R	Sh	Sh	Sh		
	R	R	Sh	IB	Sh		
	R	R	Sh	IB	Sh	OB	K
	R	W	Sh	IB	Sh	K	Sh
	R	W	IB	IB	Sh	Sh	Sh
	R	Sh	IB	IB	IB	Sh	Sh
	R	Sh	IB	IB	IB	Sh	Sh
	W	IB	IB	IB	IB	Sh	Sh
	Sh	IB	IB	IB	IB	Sh	Sh
	IB	IB	IB	IB	IB	IB	IB

mm.²

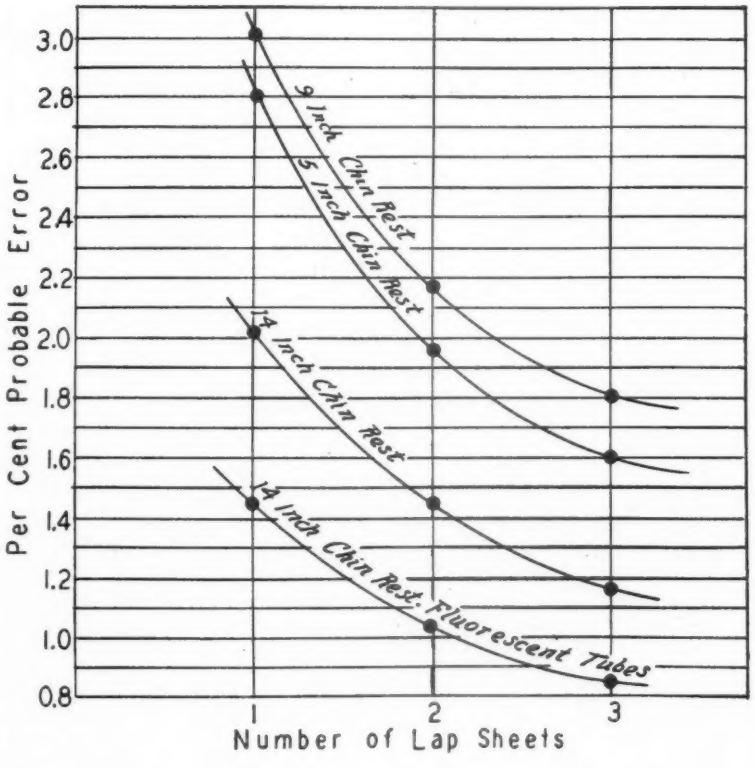

FIGURE 5. Probable errors in relation to number of lap sheets used with different chin rests.

TABLE VIII

Variations in the Number of Specks Per Gram of Ovendry Pulp

Set	Squares Counted	Total Dirt Count per g. of O.D. Pulp
1	1, 16, 24, 32, 46	67.4
2	1, 16, 24, 32, 46	72.3
3	1, 16, 24, 32, 46	83.5
4	1, 16, 24, 32, 46	121.0
5	1, 16, 24, 32, 46 and opposite side	
	6, 12, 34, 46, 41	95.0

TABLE IX

Dirt Count by the Simmonds, Billington and Baird Method Employing Standardized Conditions

	Set No. 1	2	3	4	5	6	7
Dirt Count (a)	107.1	89.2	93.2	75.0	82.0	81.0	87.0
Per g. O.D. Pulp (b)	.....	.....	79.5	93.5	68.2	81.9	88.4

TABLE X

Influence of Type and Position of Lights on Dirt Count at 14-Inch Chin Rest (Weyerhaeuser Method)

Type of Light	Distance of Lights in.	Dirt Counts per Pound of O.D. Pulp 1	2	3	4	Ave.
Four 50-watt White Bulbs	9.5	5480	5910	5660	5490	5635
Four 150-watt White Bulbs	9.5	6150	6310	6020	.....	6160
Four 60-watt Daylight Bulbs	9.5	6010	6150	6410	6420	6249
Four 60-watt Daylight Bulbs	4.5	6540	6710	6680	6520	6610
Two 17-inch Fluorescent Tubes, 15-watt	13.0	8530	9360	8560	8460	8727
Two 17-inch Fluorescent Tubes, 15-watt	8.0	8900	8500	9090	8880	8842

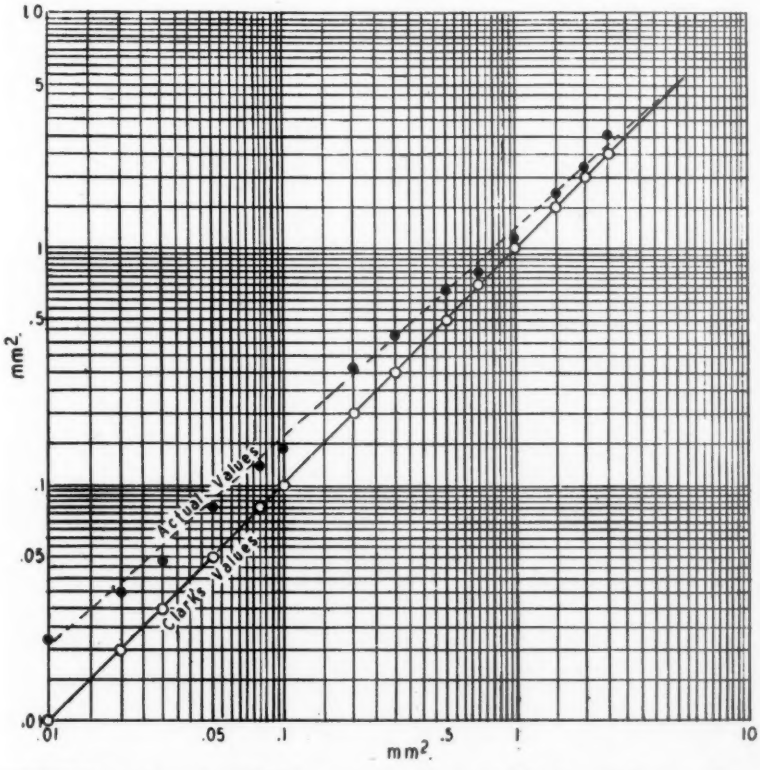

FIGURE 6. Actual and theoretical values of Clark speck counting chart.

of the box in the mill. The box may be in a relatively dark corner of the mill or in a place where window light or overhead lights may influence the count. The method has no place among standardized procedures, but a few experimental counts based upon the method were made for the purpose of comparison.

A double light box equipped with eight 60-watt bulbs comprised the set-up for this experiment and the specks in eight full-sized dry lap sheets were counted of which, besides the transmitted light from the box, the count of Sheet 1 was made with strong sunlight reflected from a nearby window, Sheets 2 and 5 with dull light from the window and Sheets 6 to 8 with the room darkened. Specks on both sides, a and b, were counted and the total reported as number of specks per oven dry pound of pulp. The data in Table XV show that the external lighting conditions affect the count and that the number of surface particles that can be seen increases with improved lighting conditions in the room. The count per oven dry pound is also much less than that obtained by the Weyerhaeuser method (4896 specks as compared with 8807).

SUMMARY

• This work shows that in preparing handsheets for the laboratory method of determining the relative amount of specks or dirt in pulp, the following factors are of importance:

The pulp must be disintegrated until it is completely defibrillated; beyond this point stirring has no influence upon the speck count.

The basis weight of the sheet must be heavy enough to stand handling and at the same time be as light as possible for a complete speck count; 37-lb. (24x 36—500) seems to be the most appropriate.

The sheets should be subjected to pressure with felts between each sheet to obtain a smooth even surface. The specks are determined from the wet sheets by counting both sides of the sheet.

The kind of light and the distance of the light from the ground-glass plate in the box is of importance. Four 60-watt daylight bulbs give the highest count and 3.5 inches from the top of the light bulbs to the bottom of the ground glass gives the best illumination. (Work done with the Weyerhaeuser box for speck count in the mill suggests that short daylight fluorescent tubes may be even better.)

The height of the eye point above the sheet is of great importance, not only for the uniformity of count but also for the relative number of specks observed and the frequency distribution of the relative square area of the specks. A chin rest 14 inches above the sheet has been found to give the most desirable results.

The uniformity of counts obtained at different heights of the eye levels, counting a large number of sheets, shows that counts can be made with a percentage probable error of +2.5 per cent, using eight sheets for the count and that nothing is gained by increasing the number of sheets beyond this number.

For a mill control method, the following points have to be considered:

The light box must be so constructed and placed that the speck count will not be influenced by external light conditions.

The lap sheets should be thoroughly wetted so that as many specks as pos-

sible can be seen with transmitted light and the specks on both sides should be counted.

The best type of illumination for this box was found to be two 17-inch, 15-watt daylight fluorescent tubes at a distance of 8 inches from the bottom side of the sheet, which produces a very even illumination and also prevents the sheet from drying out during the counting.

The best height of the eye point was found to be the same as for the laboratory method—using a 14-inch chin rest above the sheets.

One sheet 12 by 12 inches was found to be sufficient for a reasonably small probable error of the count.

The relative square area and a rough qualitative analysis of the most common specks in woodpulps can easily be determined with a shop microscope attached to a swinging telescopic arm over the opening of the light box.

When the results of the classifications and area determination are typed as suggested in Tables VII and XII, they disclose in a simple manner the nature of the dirt specks and also the relative amounts and sizes of the most objectionable specks as well as their source.

SUGGESTED METHODS

Laboratory Control

● The pulp is thoroughly disintegrated, using 40 grams of airdry pulp in 12 liters of distilled water. From this, eight sheets are formed on a Buchner funnel, using a clean felt as a filter pad for each sheet, which should have a basis weight of 37 lb. (24x36—500). The sheets are placed one on top of another with felts between, wrapped in a clean white paper and pressed for 2 min. under a one-ton over-all force. The sheets are placed, one at a time, on a special light box (See Fig. 1) kept in a darkroom and illuminated with four 60-watt daylight Mazda bulbs or two short daylight fluorescent tubes with the top of the light 3.5 inches below the bottom of the ground-glass plate. All the visible dirt on both sides of the sheet is counted and marked with an indelible pencil. Measurements and exact qualitative analysis can be made by picking out the specks and placing them on a microscope slide or, roughly, if the box is equipped with a shop microscope attached to a swinging telescopic arm, they can be made directly from the sheets.

The sheets are then ovendried and weighed to the nearest tenth of a gram and the speck count reported as number of specks per gram of pulp.

If the measurements and analysis are not made directly on the sheets, 50 specks are removed from the remoistened dried sheets and placed on a slide which is put under the microscope for micrometric measurements and qualitative analysis.

Mill Control Method

The Weyerhaeuser method as described in this paper with the following modifications and additions should offer the most convenient and accurately reproducible method for mill operation.

The lights should be two 17-inch 15-watt daylight fluorescent tubes placed eight inches below the grid. Wetted lap sheets (12-by-12-inch) should be examined on both sides of the sheet at an eye level given by a 14-inch chin rest above the sheet. The box should be placed in a convenient place in the mill with the open side away from windows or other strong reflected light.

A swinging telescopic arm with a shop

TABLE XI

Dirt Count Per Pound Ovendry Pulp at Various Eye Levels

Sheet No.	Bulbs 14 in.	Bulbs 9 in.	Bulbs 5 in.	Fluorescent Tubes 14 in.
1	6540	8790	9440	8900
2	6710	8200	9560	8500
3	6680	7880	8750	8723
4	6520	8300	9110	8723
5	6820	7530	9410	9090
6	6490	8150	8280	8880
7	6650	8310	9050	8640
8	6820	7430	9860	8480
9	6490	7530	8560	8740
10	7100	7360	9320	8810
11	6930	8350	8580	8580
12	7010	8250	9020	8660
13	6450	8300	8650	8680
14	6860	8300	8900	8520
15	6580	7790	8840	8920
Av. D.C.	6710	8031	9032	8723
S.D.	203	372	374	188
S.D. / Av. D.C. × 100	3.02	4.62	4.15	2.45
Per Cent P.E. 1.	2.02	3.05	2.80	1.45
Counting No. 2.	1.45	2.17	1.96	1.04
of Sheets 3.	1.15	1.80	1.60	0.84

TABLE XII

Classification of Specks in the Different Area Groups for Fluorescent Lights at 14-Inch Chin Rest

A

Key	Frequency	Area (mm.)²	% Area
IB=inner bark	17	2.339	49.80
OB=outer bark	4	0.352	7.50
Sh=Shive	2	0.420	8.95
R=resin	21	1.437	30.60
X=others	6	0.143	3.15

0-.01	.01-.20	.02-.04	.04-.10	.10-.20	.20-.50	.50-1.0	1.0-+
			R				
		X	R				
		X	R				
		X	R				
		X	R				
		R	R				
		R	OB				
		R	OB				
		R	IB				
		R	IB		R		
		R	IB	R	R		
	X	R	IB	Sh	Sh		
	X	R	IB	IB	OB		
	R	OB	IB	IB	IB		
	R	IB	IB	IB	IB		
	R	IB	IB	IB	IB		

mm.²

B

	Frequency	Area (mm.)²	% Area
IB	16	3.227	51.30
OB	3	0.312	4.95
Sh	2	0.790	12.50
R	22	1.736	27.60
X	7	0.232	3.65

0-.01	.01-.02	.02-.04	.04-.10	.10-.20	.20-.50	.50-1.0	1.0-+
		X					
		X	X				
		X	R				
		X	R				
		R	R				
		R	R	R			
		R	R	Sh			
	X	R	R	OB			
	X	R	OB	IB			
	R	R	OB	IB	R		
	R	R	IB	IB	IB		
	R	R	IB	IB	IB	R	
	R	R	IB	IB	IB	Sh	
	IB	R	IB	IB	IB	IB	

mm.²

TABLE XIII

Micrometric Measurements (Square Millimeters) of Specks on Clark's Estimation Chart

Clark Values	Actual Values	Clark Values	Actual Values
.01	.0216	.30	.430
.02	.0350	.50	.655
.03	.0480	.70	.894
.05	.0800	1.00	1.210
.08	.1210	1.50	1.750
.10	.1410	2.00	2.440
.20	.3180	2.50	3.140

TABLE XIV

Speck Count and Parts Per Million as Determined by the Clark Method

Count	Number of Specks in 12 by 12-inch Sheets		Dirt Count Parts per Million	
	(a)	(b)	(a)	(b)
1	143	121	51.40	51.80
2	132	122	72.50	54.25
3	129	122	60.60	56.90
4	151	137	46.40	55.10
5	170	145	59.30	57.80
6	184	155	64.10	49.60

TABLE XV

Speck Count by the Open Box Method

Outside Light	Count	Specks per O.D. Pound a	Specks per O.D. Pound b	Total Count a + b
Sunshine	1	2990	3400	6390
	2	2345	2880	5225
	3	2320	2798	5118
Dull Light	4	2362	2662	5024
	5	2230	2797	5027
	6	1782	2350	4132
Dark	7	1536	2281	3817
	8	1682	2758	4440

microscope attached can be placed on the box in such a manner that it can reach all parts of the sheet. Fifty specks in the moistened sheet are measured and analyzed and classified so that a typist can prepare the frequency tabulation of size and type of specks as is shown in Table XII.

For unbleached pulp a 12-by-12-inch sheet is sufficient for reasonable accuracy, but for bleached pulp more sheets may be advisable. The specks are reported as number of specks per ovendry pound of of pulp.

Acknowledgements

● The authors wish to express thanks to B. L. Browning and Charles M. Koon of The Institute of Paper Chemistry for their valuable suggestions during this work.

[1]Graff, John H., "Pulp and Paper Microscopy" (Appleton), mimeographed. C 1936.

[2]Simmonds, F. A.; Billington, P. S., and Baird, P. K., "Paper Trade," J. 97, no. 4:40-42 (July 27, 1933).

[3]Private communication by G. S. Brazeau, manager, Everett Mill, Weyerhaeuser Timber Co., Everett, Washington.

[4]Clark, James d'A., "Paper Trade J.," 96, no. 26:27-28 (June 29, 1933).

New B. C. Vacation Law Upsets Schedules

● New provincial legislation requiring that all industrial workers be given a week's vacation with pay has caused considerable inconvenience to British Columbia's pulp and paper mills, and the business of organizing the personnel so that all members get their required days off has imposed some hardship, as the plants have been under heavy pressure this year in view of heavy wartime demand.

However, it is unlikely that any organized protest will be made unless it is found that the holidays seriously interfere with production.

Pulp and paper companies so far have fixed no general policy regarding continued payment to men of 21 to 24 who are drafted for a month of military service. Some firms in other lines of business have undertaken to compensate their men for any loss of salaries or wages, but inasmuch as general costs of production in British Columbia are reputedly about 25 percent higher than in eastern mills already, it seems unlikely that the pulp and paper industry will feel disposed towards generosity in this connection.

Coast Population Gains Increasing Paper Market

● One of the principal factors in the increasing consumption of paper and paper products on the Pacific Coast has been the growth of population in the decade, 1930-1940.

The population of Washington, Oregon and California totaled 9,682,781 on April 1, 1940, the Bureau of the Census announces. This was an increase of 1,488,348, or 18.2 per cent, in ten years. The most rapid growth occurred in California, where the population jumped 21.1 per cent to 6,873,688.

Hold Conference At Olympia

● A conference of the personnel and safety supervisors of the Crown Zellerbach Corporation and Rayonier Incorporated, was held at the Olympian Hotel, Olympia, Washington, September 25th through the 27th.

Attending were all the personnel and safety supervisors from the mills in the Northwest, A. R. Heron, director of public and industrial relations, Otto Hartwig, in charge of safety work, Robert Williams, in charge of field safety work, and Fred Pontin in charge of first aid work.

Stark Wilson Associated With Harold Cavin on Bellingham Job

● Stark Wilson, construction engineer, arrived in Bellingham September 28th to work for Harold D. Cavin, consulting engineer in charge of expanding the Puget Sound Pulp & Timber Company's unbleached sulphite pulp mill by 50 per cent or 50,000 tons annually. Mr. Wilson will assist in general design and process work.

Mr. Wilson came to Bellingham from Mobile, Alabama, by way of Nashua, New Hampshire where he picked up his family and drove to the Pacific Coast. The five months he spent at Mobile were in connection with the installation of the bleach plant for the Hollingsworth & Whitney bleached kraft pulp and paper mill which has just recently begun operations.

Before going to Mobile Mr. Wilson was with the Improved Paper Machinery Corporation at Nashua for a year working on bleach plant design. He was with the Brown Company of Berlin, New Hampshire, for 22 years working in all operating and engineering departments. At the time he left the Brown Company he was in charge of development and process work. Before joining the Impco organization he spent six months on construction work for the Dunn Sulphite Paper Company of Port Huron, Michigan.

STARK WILSON, Engineer with H. D. Cavin on Bellingham expansion.

Sixth Hi-Jinks Biggest Yet

FOR the sixth year the Paper Mill Men's Club of Southern California were hosts to the wholesale paper and twine distributing trade in their annual Sports Carnival and Hi-Jinks. The event was held on Friday, September 27th, and for the fourth time at the Riviera Country Club. Attendance this year was slightly more than last year with 325 members and guests at dinner.

In the program for the day, it was stated, "* * * the annual Paper Mill Men's Club Hi-Jinks has become a permanent event in the 'paper world' of Southern California." Any who attend this affair can always add, "not only permanent but most successful," for the Club has the faculty of so arranging the day that every minute is carefully planned for the complete enjoyment of everyone.

Officers of the organization, who with the committee in charge and the board of directors, are responsible for the party's success, are Charles Speis, president, Lester E. Remmers, vice-president, Paul R. Raab, secretary, and Dwight J. Tudor, treasurer. Presidents for each year since the Club's inception in 1935 were at the party. These are Frank R. Philbrook, Ed. N. Smith, Neil B. Sinclair, George C. Weiman and A. C. Hentschel, in order of their years of service.

The committee in charge, whose duties are multitudinous and whose good works are always evident the day the big event comes around, was composed of Frank N. Gladden, general chairman, Marvin Vanderheiden, vice-chairman, and on the sub-committees were: Tickets, G. A. Theim, chairman, Verner Moore, F. C. Van Amberg, Merle M. Paup, W. H. Charbonneau; Finances, Newby Green, chairman, Harry Fields, Ned Whiting; Program, Horace Gibson, chairman, George C. McNamara, A. E. Kern; Entertainment, Art Fox, chairman, G. N. Madigan; Reservations committee, Neil B. Sinclair, chairman; Golf, Emile J. La Vigne, L. Mork; Sports and Soft Ball, Ben Bohnsen, chairman, Hays Rehm; Door prizes, Art Carlson, Mike Carter, Bill McBride.

Ninety-four Played Golf

The golf tournament was the first event of the day with the participants filing out from noon on. The Riviera course is well known as a sporty course and is a real challenge to good golfers. The ninety-four men who played were: Emile J. La Vigne, Stanley G. Yount, Art Fox, H. Horiuchi, C. Y. Arima, Geo. D. Bloomfield, J. D. Tudor, Bill Decker, G. A. Theim, H. R. Kernberger, A. Applebaum, Geo. C. Weiman, Earl A. Underwood, Stanley E. Potter, Carl Smith, Lester E. Remmers, A. H. Sigrist, W. Kenwood, A. E. Kern, C. G. Hulse, Milt Corcoran, A. M. Thompson, L. W. Hagstrom, A. J. Nelson, Fritz Carman, E. E. Eiffert, Bob Tily, Don Plumb, C. J. Allan, Mike Carter, Carl Thomas, Earl Van Pool.

Philo K. Holland, Lloyd Riches, C. F. Jenkins, F. D. Smith, N. J. Gray, J. T. Smith, Bill Taverner, F. N. Gladden, M. A. Vanderheiden, Chas. Spies, Russ Attridge, Geo. Marmion, Bill McBride, Harry Fields, F. C. Van Amberg, R. E. LeGrant, Carl Fricke, Floyd Smith, F. R. Philbrook, Warren E. Webb, C. G. Grimes, A. F. Arnold, A. C. Hentschel, I. E. Damon, Roy Autry, Roland W. Colwell, W. H. Wetzman, N. A. Green, P. G. Cann, C. B. Kerr.

Cort Majors, Chas. Rubble, Lee Lamboy, Chas. E. Jones, Gordon Ross, Walter Genuit, M. J. Boradori, Wm. Weitsman, V. Krone, P. R. May, N. Marcalus, C. Dukey, J. Maurer, Merle Paup, M. R. Strickler, B. T. Close, L. F. Edes, R. DeHater, N. C. Larson, R. W. Erlandson, J. S. Fairchild, A. A. Ernst, B. R. Manker, J. N. Peterson, Halsey Lamme, Marcus Ray, James W. Reynolds, F. L. Hinton, Victor Jones, T. E. Bruffy, Marshall Moss, and Andrew Christ.

Softball Tournament

While the golfers were having it out on the links, the softball enthusiasts gathered down by the old bleachers elbow lifting stand and drew up sides. This year's teams were not clear cut paper mill men versus paper merchants in their organization. In fact one critic noted that the game resembled an arrangement referred to in the short pants era as "one a-cat" with a healthy sprinkling of caddies thrown in to round out the field of play so that there was some one to take care of those home runs out to right field. Chairman Ben Bohnsen saw to it, however, with the able help of Hays Rehm that those who got onto the field had a thorough-going workout and a lot of fun. So it ended with last year's score for series still standing a tie between mill men and merchants.

Spies States Purpose

● As soon as the party convened in the dining room things began to happen. President Chas. Spies restated the purpose of the party, namely, "to concretely and sincerely show the high regard of the club membership for their friends who merchandise their products." He then turned the meeting over to the general chairman of the Hi-Jinks, Frank N. Gladden. First in order of business was the announcement of the golf winners. Chairman Gladden called on Emile LaVigne who announced the winners, their scores and handed out the many beautiful prizes to the winners.

First low gross winner was W. E. "Bill" Taverner who took the field with a 77 and won a handsome traveling kit. Second Low Gross went to Fritz Carman, whose 79 score, won him a combination traveling kit. First Low Net went to H. Horiuchi, whose score of 66, shooting a 96 with 30 handicap, won him a fine country club bag. Harry Fields shooting 89 with an 18 handicap, made a net of 71 to take Second Low Net and a prize of a country club bag. The Nine Blind holes prize went to Merle Paup whose score on this was 31; an electric clock was his prize. The First Blind Bogey tied between Geo. Marmion, F. R. Philbrook, A. F. Arnold and L. W. Hagerstrom, went on the toss to Arnold; a country club bag was the award. The score on this was 77. The Second Blind Bogey Score, 79, was hit by C. B. Kerr, Geo. Bloomfield and Art Kern. The draw here went to C. B. Kerr who won a football cushion. Art Fox, W. J. Gray and J. S. Fairchild with the Third Blind Bogey score of 73 tied among them, tossed for the fine leather wallet prize of this division and Fox won. A Fourth Blind Bogey prize was tied for at 78 by A. Applebaum and Geo. C. Weiman. Applebaum won the toss and another fine leather wallet.

● Then came the door prizes. Art Carlson, assisted by Mike Carter and Bill McBride, officiated. Acting as the hand of fate one of the entertainers drew the numbers. First drawing went to Chas. Brouse, a silver compote. In order of drawing the remaining prizes were as follows: Stanley Potter, an electric clock; Sam White, a silver plate; Charles Hulse, pen and pencil set; F. M. Boyer, a merchandise order; Wm. Bessire, a desk pen set; Al Williamson, package, contents unknown; Dave Rudnick, a silver plate; Larry Bleasdale, an electric percolator; J. H. Huddle, package, contents unknown; Jack Leiser, an electric clock; Larry Young, silver candlesticks; C. J. Little, a package, contents unknown; F. L. Horton, M. A. Louis, and L. A. Reed, each a merchandise order; Wm. Weitzman, James Bylling, Jerry Madigan, Joe Berry, Frank Philbrook, Wm. O. Hokan-

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SNAPPED AT THE SIXTH ANNUAL PAPER MILL MEN'S CLUB HI-JINKS . . . No. 1, left to right, L. F. EDES, DON PLUMB, W. E. WEBB and R. T. CLOSE. No. 2, CHAS SPIES and FRANK GLADDEN. No. 3, left to right, CHRIS ALLAIR, KEN SHERWOOD, CARL THOMAS and CARL SMITH.

No. 4, CHET GUNTHER and Jack NELSON. No. 5, left to right, IRV DAMON, BILL COLWELL, MERLE PAUP and ROY AUTRY. No. 6, FRANK GLADDEN and MARVIN VANDERHEIDEN. No. 7, left to right, C. B. KERR, CORT MAJORS, CHAS. RUBLE, ELMO EIFFERT and Dave CRIKELAIR. No. 8, EDWARD N. SMITH.

No. 9, left to right, F. O. FERNSTROM, E. C. SWANBERG and W. H. CHENOWITH. No. 10, left to right, P. E. LOER, J. W. DECKER and J. D. TUDOR. No. 11, HALSEY LAMME, JULIUS PETERSON, B. R. MANKER and M. RAY. No. 12, GERRY THEIM, H. R. KERNBERGER and WILLIAM BRUNAUGH.

No. 13, M. VICTOR JONES, MARSHALL MOSS, JAMES REYNOLDS and F. L. HORTON. No. 14, G. D. EDWARDS, LEE S. RICHEY and PHIL OSSIAN.

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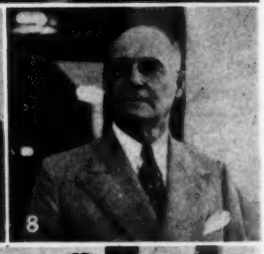

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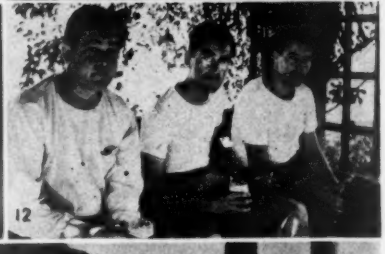

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son, Victor Jones, Charles Pritchard, Russell Baiuier, Garry Carlton, Joe Parsons, A. F. Arnold, and L. D. West, each a bottle of liquor, and Sydney Horowitz, a leather brief case.

Following this came the drawing for the Christmas Party Fund awards. As stated by Chairman Theim in the program, "We like to believe that the most worthwhile activity of the Paper Mill Men's Club is the Christmas Party given each year to a group of less fortunate young boys of the community." The Christmas Fund tickets bought by members and friends of the Club make this event possible and add materially to the good time of the evening. The drawing for prizes followed with winners as follows: N. P. Gray of Los Angeles, winner of the first prize of $500, Gordon Perkesson of South Gate, winner of second prize of $100, John P. Brits of Los Angeles, winner of the third prize of $50.

Winners of $20 prizes were as follows: R. Newman, R. B. Wolf, T. C. Ticoulat, Peerless Bakery, I. A. Reiss, J. G. Ramsey, Jr., Betty Jones, Margary Oda, R. L. Jeppson, Mildred Sturgeon, R. L. Mitchell, Johnson, Carvel & Murphy pool, S. A. Larson, D. F. Shomate, Willie Hunter, Dryer & Madigan, Frank Hirsch, Ralph Hill, J. V. Sparkson.

No small contribution to the success of the party were the attractive programs with gold covers, printed in black and

MORE SNAPSHOTS AT THE HI-JINKS . . . No. 1, A. A. ERNST, R. C. LARSON, L. W. LAMBOY, R. K. ERLANDER and J. S. FAIRCHILD. No. 2, BILL WEST and BILL CHARBONNEAU. No. 3, A. J. NELSON, R. H. TILY, LESTER REMMERS and ART SIGRIST.

No. 4, HAYS REHM, DICK WHITING and BEN BOHNSEN. No. 5, JERRY MADIGAN, GEORGE McNAMARA, HORACE GIBSON, DICK WHITING, WILLIAM BRUNAUGH, MIKE CARTER, BEN BOHNSEN, HAYS REHM. No. 6, DICK WHITING hits a fast one in the softball game.

No. 7, JACK ARNOLD, AL HENTSCHEL, LLOYD RICHES and L. W. HAGERSTROM. No. 8, M. J. BORADORI, VICTOR KRONE, MILES STRICKLER and BILL WEITZMAN. No. 9, ROLLA de HATER, NEWBY GREEN, GARRY CANN, J. W. GENUIT and ART FOX. No. 10, W. B. REYNOLDS and JACK NELSON.

red containing a welcome to all, the order of the day, officers, committee members, sponsors and guest companies' names, as well as the menu, list of entertainment features, and a few pertinent cartoons. Horace Gibson and his committee of Geo. McNamara and A. E. Kern were responsible for this.

The floor show followed the awarding of prizes and the dinner. Art Fox and Jerry Madigan did themselves proud in this phase of the party. A lively M. C., George Riley kept the program moving at a rapid clip. There were twenty features singers, dancers, and specialties. A surprise feature was Carmen Antonio, who came to national note in a late issue of Life magazine as an unusual find in the night club entertainment world. Betty Gordon, a strolling musician before, during and after the show kept the folks singing with the aid of her accordion.

After the floor show the party retired to the game rooms where they continued the good fellowship into the small hours.

Hosts

• The following members of the Paper Mill Men's Club, and the manufacturers whom they represent, made the sixth annual Hi-Jinks possible.

Adhesive Products, Inc., Lloyd Ramsey; **Angelus Paper & Excelsior Products Co.,** F. C. Van Amberg, John E. Carson, Earl Van Amberg; **Bloomer Bros. Sales Corporation,** Johnson, Carvell & Murphy; **Boothby Fibre Can Company,** Johnson, Carvell & Murphy; **Boston Drinking Cup Co.,** H. O. Bishop; **Brown Paper Goods Co. of Calif.,** C. E. Digby; **California Cotton Mills Co.,** Ben Bohnsen, H. Leichhardt; **California-Oregon Paper Mills, Div. of Columbia River Paper Mills,** Taylor Alexander, J. M. McCord, Geo. H. McCord; **Capital Envelope Co., Ltd.,** George McNamara, Horace Gibson; **Clark Stek-O Corporation,** George D. Bloomfield; **Comfort Paper Corporation,** L. C. Harden, Merle Paup, L. F. Anderson; **Consolidated Paper Mfg. Co.,** Sam Goldman, Larry Young; **Continental Bag Specialties Corporation,** I. A. Reiss.

Crown Willamette Paper Co., Lester E. Remmers, Wm. R. McHaffie, H. A. Swafford, R. H. Tily, Newbey A. Green, Chester O. Gunther, A. H. Sigrist; **Crystal Paper Service Corporation,** Paul R. Raab; **Cupples Company,** Charles Spies, Emile J. LaVigne; **Dixie Vortex Company,** Verner Moore, F. F. Carman, Geo. P. Spenzer; **The Dobeckmun Company,** Chas. E. Jones, T. E. Bruffy; **Everett Pulp & Paper Company, A. A. Ernst,** Gene L. Arth; **Fernstrom Paper Mills, Inc.,** F. O. Fernstrom, J. W. Genuit, J. E. Maurer, E. G. Swanberg, W. H. Chenoweth, D. P. Nichols; **Fibreboard Products, Inc.,** O. C. Majors, J. D. Tudor, Jules Sparks, J. H. McDaniels; **Gilbert Paper Company,** Roland W. Colwell; **Graham Paper Company,** Frank R. Philbrook, Williard F. J. Taylor.

Great Western Cordage, Inc., A. B. Wimpey, C. H. Allen, R. Hollis Hardy; **Harvey Paper Products Co.,** H. O. Bishop; **Hardwood Products Co.,** West Coast Coverage Co.; **Hawley Pulp & Paper Co.,** W. B. O'Malley; **Herz Manufacturing Corp., Hygeia Toothpick Co. Division,** West Coast Coverage Co.; **Inland Empire Paper Company,** S. R. Whiting, John E. Whiting; **Johnson, Carvell & Murphy,** Russell F. Attridge, Garry Carlton, William F. Dreyer, Al C. Hentschel, "Jerry" Madigan, E. M. Murphy, E. W. Murphy, Myrl Carver, Phil Ossian; **Kimberly-Clark Corporation,** C. Francis Jenkins; **Lily Tulip Cup Corporation,** W. A. McBride.

Longview Fibre Company, A. D. West, E. P. Hill; **Los Angeles Paper Bag Company,** John P. Nelson, C. J. Little; **Menasha Products Co.,** L. R. Zick; **Milwaukee Lace Paper Co.,** G. A. Thiem, Wm. Brunaugh; **Morgan Paper Company, A. U. Morse & Co. Division,** Elmer C. Thomas; **Nashua Gummed & Coated Paper Company,** Neil B. Sinclair; **National Paper Products Sales Co.,** Harry L. Fields; **Nekoosa Edwards Paper Company,** Marvin Vanderheiden; **Northern Paper Mills,** Irvin E. Damon; **Oregon Pulp & Paper Co.,** Lewis H. White; **Pacific Coast Paper Mills,** S. G. Wilson, Louis F. Wanka.

Pacific Waxed Paper Company, Chas. L. Brouse, Hal D. Cassaday, Anthony P. Sheehan; **Paper Container Manufacturing Company,** J. M. Sholl Lewis, C. T. Rankin; **Paper Supply Co.,** C. C. Bolyard, C. R. Pritchard, C. O. Helmick, Jack Lawrence; **Paterson Pacific Parchment Company,** Floyd D. Smith; **Pioneer Division The Flintkote Co.,** Arthur E. Carlson, L. M. Simpson, M. C. Larsen, Cliff Johnston, L. B. Miller, L. L. Anderson; **Pioneer Wrapper and Printing Co. (Inc.),** Walter J. Hadley, Joe H. Huddell; **Pomona Paper Products, Inc.,** Paul R. May, M. J. Boradori; **Rhinelander Paper Co.,** Edward N. Smith.

Schermerhorn Bros. Co., A. Bruce Swope, Earl Fillier, Leo Corder; **Shellmar Products Company,** W. E. Boswell; **Silklin Paper Corporation,** W. H. Charbonneau, S. C. Carter, L. W. Hagstrom; **Straubel Paper Company,** H. O. Bishop; **Southern Kraft Corporation,** Frank N. Gladden; **Southland Paper Converting Co.,** Stanley G. Yount, Paul R. Halstead; **St. Helens Pulp & Paper Co.,** Frank R. Philbrook; **The E. O. Bulman Manufacturing Co.,** Johnson, Carvell & Murphy; **The Gummed Products Company,** E. A. Dillon; **The Tuttle Press Co.,** Edward N. Smith; **United States Envelope Co., Pacific Coast Division,** L. Mork, J. S. Fairchild, Jack Chancellor; **Union Bag & Paper Corporation,** G. S. Brenzel; **Veldown Company, Division International Paper Co.,** Perry E. Loer; **Western Paper Converting Company,** Hays Rehm, Bill Hagedorn, Lloyd Riches; **Western Waxed Paper Company,** George C. Wieman, Walter Voltz, Arthur E. Kern, Arthur Fox.

Guests

• Guests at the Hi-Jinks were:

Acme Paper Company, Glendale, California; **Alpha Beta Food Markets, Inc.,** Vernon, California; **American Paper Company,** Los Angeles, California; **Angelus Paper Excelsior Products Co.,** Los Angeles, California; **Badger Paper Company,** South Gate, California; **Bakers & Confectioners Supply Co.,** Los Angeles, California; **J. H. Ball Wholesale Company,** Glendale, California; **Barnum and Flagg,** San Bernardino, California; **Blake, Moffitt & Towne,** Los Angeles, California; San Diego, California; **Brin Brothers,** Los Angeles, California; **Brunswig Drug Company,** Los Angeles, California; **Buel-Town Co.,** San Diego, California; **California Grocer Co., Inc.,** Los Angeles, California; **California Hardware Company,** Los Angeles, California; **California Tobacco & Supply Co.,** Long Beach, California; **Cann and Company,** Los Angeles, California.

Carpenter Paper Company, Los Angeles, California; **Cash Wholesale Tobacco Company,** Los Angeles, California; **Central Paper Company,** Glendale, California; **Certified Grocers,** Los Angeles, California; **Channel Paper & Supply Company,** Santa Barbara, California; **Colonial Wholesale Grocery Company,** Los Angeles, California; **Corcoran Paper Company,** Long Beach, California; **Eastern Wholesale Grocery Company,** Los Angeles, California; **Easterday Supply Company,** Los Angeles, California; **Fred H French Paper Company,** Los Angeles, California; **Fricke & Peters,** Long Beach, California; **General Paper Company,** Los Angeles, California; **General Woodenware Company,** Los Angeles, California; **Glen L. Clark Company,** Long Beach, California; **Juillard-Cockroff Corporation,** Ventura, California, San Luis Obispo, California; **Great Atlantic & Pacific Tea Company,** Vernon, California.

Guevara Bros., Los Angeles, California; **Gordon Jenkins Company,** Los Angeles, California; **Grimes Stasforth Stationery Co.,** Los Angeles, California; **Haas, Baruch & Company,** Los Angeles, California, El Centro, California, San Diego, California; **E. E. Hoagland Company, Ltd.,** Long Beach, California; **Hollywood Paper Company,** Hollywood, California; **Ingram Paper Company,** Los Angeles, California; **Interstate Wholesale Grocery Co.,** Los Angeles, California; **D. F. Joehnck,** Santa Barbara, California; **Kelly Paper Company,** Los Angeles, California; **Klauber Wangenheim Co.,** Los Angeles, California, San Diego, California; **LaSalle Paper Company,** Los Angeles, California; **Alfred M. Lewis Company,** Riverside, California, San Diego, California; **Los Angeles Drug Company,** Los Angeles, California; **Market Wholesale Grocery Company,** Los Angeles, California; **Margolis Bros., Ltd.,** Los Angeles, California; **Marmion & Company,** Long Beach, California; **McKesson & Robbins, Inc.,** Los Angeles, California.

Pacific Chemical Company, Los Angeles, California; **Pacific Pulp & Paper Industry,** Los Angeles, California; **Pacific Wholesale Grocery Company,** Los Angeles, California; **Paper Products & Supply Company,** Los Angeles, California; **Paper Supply Company,** Los Angeles, California; **Ralph's Grocery Company,** Los Angeles, California; **Rand, Halpin & Hibbler,** Santa Maria, California; **W. B. Reynolds,** Los Angeels, California; **Roberts Public Markets,** Venice, California; **I. Rudin & Company,** Los Angeles, California; **S. E. Rykoff & Company,** Los Angeles, California; **Safeway Stores,** Los Angeles, California, San Diego, California; **M. Sakamoto Company,** Los Angeles, California; **San Diego Paper Company,** San Diego, California; **San Diego Products Company,** San Diego, California; **Sam Sawelson Wholesale Company,** Los Angeles, California; **W. A. Scheinman Paper Company,** El Centro, California; **Smart & Final Company, Ltd.,** Wilmington, California, Santa Ana, California, Glendale, California, San Bernardino, California.

Sierra Paper Company, Los Angeles, California; **Southern California Disinfecting Co.,** Los Angeles, California; **Southern California Wholesale Grocery Co.,** Los Angeles, California; **Sparton Grocery Company,** Los Angeles, California; **R. E. Spriggs Company,** Los Angeles, California; **State Wholesale Grocery Company,** Los Angeles, California; **Stationers Corporation,** Los Angeles, California; **Stockwell-Binney Company,** San Bernardino, California; **Taverner & Fricke,** Los Angeles, California; **Three Star General Supply Co.,** Los Angeles, California; **Trade Supply Company,** Santa Monica, California; **Union Hardware & Metal Company,** Los Angeles, California; **Union Paper Supply Company,** Los Angeles, California; **United States Paper Company,** Los Angeles, California; **United Jewish Retail Grocer Co.,** Los Angeles, California; **United Supply Company,** San Diego, California; **Upholstery Supply Corporation,** Los Angeles, California; **John Vanderzyl,** Riverside, California; **Wellman-Peck,** San Diego, California; **West Coast Bakers Supply,** Los Angeles, California; **Western States Supply Company,** Los Angeles, California; **Wilson Paper Company,** Los Angeles, California; **Weil Paper Company,** Los Angeles, California; **Zellerbach Paper Company,** Los Angeles, California.

Pulp and Paper Situation In Orient

• Japan's action in joining the Axis powers has unsettled the Pacific shipping situation and has already affected the sales of British Columbia pulp and paper mills to the Orient.

Newsprint executives report that in view of the prevailing uncertainty, China is now virtually out of the market. In the past a considerable volume of paper was imported by China from the Pacific Northwest through Shanghai, but if, as some despatches indicate, Japan takes over the International Settlement, all buying by China would come to a dead halt.

Shanghai has always been the chief paper consuming territory in China, with some of the paper being shipped up the Yangtse to interior cities. A small amount went to Hongkong. Several months ago when hostilities were intense in the Shanghai area, Hongkong undertook to transship some of the newsprint to China via other routes. It is understood that no paper has been moved recently over the Burma Road, which will be re-opened this month, according to present plans of the British government, and it is unlikely that the Burma Road will handle any in the immediate future.

There have been so many difficulties in connection with Oriental business that most of the pulp and paper trade has virtually surrendered that market in despair. Japan has been buying some pulp from British Columbia, but no newsprint for several years. Continued sale of pulp to Japan is not being encouraged.

Japanese interests continue to import hemlock logs from British Columbia, and the fact that these are not required at present in the domestic market and are, in fact, virtually unsalable except in the Orient has complicated the position of Brtish Columbia exporters. Most of the pulpwood shipped in the recent past has been by Japanese companies operating their own leased holdings on Vancouver Island.

There is growing hostility to continued trade by Canada with Japan, especially in materials that could conceivably be used for war purposes, such as copper, and there has been considerable criticism against continued export of raw logs to that country.

Pulp Imports Down 21% in First Eight Months

Imports from Canada up 58.7%—Shipments from overseas down 54.7%.

● Due to the heavy imports of wood pulp from Europe in the first two months of this year and the increased shipments from Canada, the imports of wood pulp into the United States in the first eight months of 1940 were down but 21 per cent below the imports for the comparable 1939 period.

The eight months' imports totaled 946,220 short tons against 1,202,140 short tons in 1939, a decline of 255,920 short tons. Canada supplied this country with 563,053 short tons of all grades of wood pulp in the first eight months of the current year against 355,253 short tons in the same period of 1939. The increase of imports from Canada amounts to 207,800 short tons or 58.7 per cent.

Imports of wood pulp from overseas in the first eight months of 1940 totaled 383,167 short tons against 846,887 short tons in the same period of 1939. The decline was 463,720 short tons or 54.7 per cent below the 1939 total.

August Imports

● Wood pulp imports, all grades, in August totaled 83,640 short tons against 148,441 short tons in August of 1939, a decline of 42.9 per cent. Finland shipped 11,312 short tons to the United States in August against 2,067 short tons in July. Canada was the only other supplier, furnishing 72,328 short tons in August against 84,034 short tons in July, and 45,559 short tons in August, 1939.

In August of 1939 the imports from Finland amounted to 29,538 short tons. The August, 1940, total of 11,312 short tons was 61.3 per cent below the same month a year ago.

From Finland this country received in August of the current year 2,291 short tons of unbleached sulphite pulp, 1,857 short tons of bleached sulphite pulp; 6,714 short tons of unbleached sulphate pulp and 450 short tons of bleached sulphate pulp.

Canada furnished 9,557 short tons of groundwood pulp; 21,651 short tons of unbleached sulphite pulp; 29,519 short tons of bleached sulphite; 5,322 short tons of unbleached sulphate; 5,434 short tons of bleached sulphate and 845 short tons of soda pulp.

Details are given in the accompanying tables.

Coast Newsprint Still $50 Per Ton

● Although Great Northern Paper Company is selling newsprint at $49 a ton, Powell River Company and Pacific Mills, the two British Columbia newsprint producers, are following the course established by International Paper and continuing the $50 rate.

Canadian newsprint production and shipments in August continued at a level substantially in advance of those for the same period last year.

COMPARISON OF WOOD PULP IMPORTS

June and July, 1940

(Tons of 2000 Pounds)

Type of Pulp	Finland		Norway		Sweden		Canada		Total All Countries	
	June	July	June	July	June	July	June	July	June	July
Mechanical Unbleached	.....	.....	.....	.....	.....	.....	21,138	19,218	21,138	19,218
Unbleached Sulphite	721	1,529	.....	.....	.....	.....	22,122	25,691	23,055	27,220
Bleached Sulphite	.....	.....	.....	.....	.....	.....	30,284	27,337	30,284	27,662
Unbleached Sulphate	7,894	538	.....	.....	.....	.....	5,164	5,008	13,058	5,546
Bleached Sulphate	.....	.....	.....	.....	.....	.....	4,759	5,839	4,759	5,839
Soda	.....	.....	.....	.....	.....	.....	1,054	941	1,054	941
Total	8,615	2,067	.....	.....	.....	.....	84,521	84,034	93,348	86,426
Percentage of Change from Previous Month	.....	—75.8%	.....	.....	.....	.....	+7.2%	—05%	+14%	—7.4%

Source: U. S. Department of Commerce, Bureau of Foreign & Domestic Commerce.

COMPARISON OF WOOD PULP IMPORTS

(Tons of 2000 Pounds)

July and August, 1940

Type of Pulp:	Finland		Norway		Sweden		Canada		Total All Countries	
	July	August	July	August	July	August	July	August	July	August
Mechanical Unbleached	.....	.....	.....	.....	.....	.....	19,218	9,557	19,218	9,557
Unbleached Sulphite	1,529	2,291	.....	.....	.....	.....	25,691	21,651	27,220	23,942
Bleached Sulphite	.....	1,857	.....	.....	.....	.....	27,337	29,519	27,662	31,376
Unbleached Sulphate	538	6,714	.....	.....	.....	.....	5,008	5,322	5,546	12,036
Bleached Sulphate	.....	450	.....	.....	.....	.....	5,839	5,434	5,839	5,884
Soda	.....	.....	.....	.....	.....	.....	941	845	941	845
Total	2,067	11,312	.....	.....	.....	.....	84,034	72,328	86,426	83,640
Percentage of Change from Previous Month	—75.8%	445%	.....	.....	.....	.....	—05%	—13.9%	—7.4%	—03.2%

Source: U. S. Department of Commerce, Bureau of Foreign & Domestic Commerce.

Powell River Enters Building Paper Field

● Powell River Company, which until recently produced newsprint exclusively, has now entered the building paper field on a commercial scale.

Only a few months ago Powell River departed from its policy of concentrating on newsprint by installing a Kamyr machine and Flakt dryer for the production of unbleached pulp. Now the company further enlarges this policy by turning out laminated sheets.

The latter move is really an extension of the program undertaken by the big British Columbia newsprint mill when it started producing laminated sheets for its own purposes as a wrap for newsprint. Before the war the company imported most of its laminated paper from the eastern United States. The distance involved, plus transportation costs and the complications of foreign exchange made it desirable to produce the material at home, and the company executives decided that installation of the required machinery at Powell River was not only feasible but well worth while economically.

The company's new product will be known as Llamabrand building papers, and will be manufactured in five grades—kraft extra strong, sulphite-kraft, sulphite, inside sheathing and heavy board sheathing.

The building papers are manufactured by cementing the sheets with a waterproof insulated asphalt manufactured at a Vancouver petroleum refinery. Production of the paper was one of the first jobs turned over to Powell River's laboratory staff after being housed in its new building.

The paper was specially developed to protect newsprint shipments from changes in atmospheric conditions and it has been used as a vapor-proof barrier on 1,000,000 tons of newsprint shipped to all parts of the world by Powell River Company.

IMPORTS OF WOOD PULP INTO THE UNITED STATES

(Tons of 2,000 lbs.)

	June 1939	June 1940	July 1939	July 1940	1940 Over 1939 June	1940 Over 1939 July
Finland	31,313	8,615	30,720	2,067	—72%	—93%
Norway	7,549	.....	3,741	.....	.....	.....
Sweden	78,263	.....	76,903	.....	.....	.....
Canada	46,642	84,521	41,179	84,034	+81%	+103%
Total (four countries)	**163,767**	**93,136**	**152,543**	**86,101**	**—43%**	**—43%**

Source: U. S. Department of Commerce, Bureau of Foreign & Domestic Commerce.

IMPORTS OF WOOD PULP INTO THE UNITED STATES

(Tons of 2000 Pounds)

	July 1939	July 1940	August 1939	August 1940	July 1940 over 1939	August 1940 over 1939
Finland	30,720	2,067	29,538	11,312	—93%	—61.3%
Norway	3,741	.....	7,283	.....	.....	.....
Sweden	76,903	.....	66,061	.....	.....	.....
Canada	41,179	84,034	45,559	72,328	+103%	+58.7%
Total (four countries)	**152,543**	**86,101**	**148,441**	**83,640**	**—43%**	**—42.9%**

Source: U. S. Department of Commerce, Bureau of Foreign & Domestic Commerce.

WOOD PULP IMPORTS INTO THE UNITED STATES

(Tons of 2,000 lbs.)

From:	Seven Months 1940	Seven Months 1939
Finland	73,973	223,786
Norway	11,405	42,980
Sweden	279,770	415,365
Other Overseas	6,706	49,746
Total Overseas	371,854	731,868
Canada	490,725	309,694
Total Imports	**862,579**	**1,041,562**

Source: U. S. Department of Commerce, Bureau of Foreign & Domestic Commerce.

COMPARISON OF WOOD PULP IMPORTS

(Tons of 2000 Pounds)

From:	Eight Months 1939	Eight Months 1940
Finland	263,324	85,285
Norway	50,263	11,405
Sweden	481,426	279,770
Other Overseas	51,874	6,707
Total Overseas	846,887	383,167
Canada	355,253	563,053
Total Imports	**1,202,140**	**846,220**

Source: U. S. Department of Commerce, Bureau of Foreign & Domestic Commerce.

Carl Richter On the Coast

● Carl F. Richter, president of the Stebbins Engineering & Manufacturing Company of Watertown, New York, spent the early part of October on the Pacific Coast visiting pulp and paper mills with A. S. Quinn, vice president of the Stebbins Engineering Corporation of Seattle, subsidiary company.

Mr. Richter had planned to attend the Fall Meeting of TAPPI in Seattle in August but as the stork was expected to call at the Richter home he remained in Watertown until a baby arrived early in September. Mrs. Richter and the youngster are doing well.

Pulp and Paper Defense Committee Organized

● On October 1st the personnel of the Defense Committee of the Paper and Pulp Industry was announced by E. W. Tinker, executive secretary of the American Paper and Pulp Association.

Ralph A. Hayward, president of the Kalamazoo Vegetable Parchment Company, is chairman. Serving with him are: W. J. Alford, Jr., Continental Paper Company, Ridegfield Park, New Jersey; R. J. Cullen, International Paper Company, New York; H. A. Legge, Howard Paper Company, Urbana, Ohio; C. B. Morgan, Rayonier Incorporated, New York City; F. J. Sensenbrenner, Kimberly-Clark Corporation, Nennah, Wisconsin; George R. Wallace, Fitchburg Paper Company, Fitchburg, Mass.; and J. L. Riegel, Riegel Paper Corporation, New York City, ex-officio member as president of the American Paper & Pulp Association.

"It is believed," said Mr. Tinker, "that the membership of this committee gives fair representation to all phases of the industry, and it is hoped that the committee may serve a very useful purpose not only in maintaining contact with the Advisory Commission to the Council of National Defense, but also as a clearing house for problems that arise within the industry."

Australian Buying of Canadian News Curtailed

● Australian purchases of British Columbia newsprint are continuing with the seven-year contract signed in 1937 with Canadian mills, but the volume has been severely curtailed owing to the rationing regulations now in effect in the commonwealth..

Powell River Company and Pacific Mills, Ltd., are contributing about one quarter of all Canada's shipments to Australia under the contract.

Australia is buying pulp in British Columbia for its Derwent Valley paper project, as it is required as a blend with Australian native woods. Volume of pulp shipments from both Powell River and Ocean Falls is not likely to be curtailed owing to Australia's policy of developing the use of domestic newsprint to as great an extent as possible.

Rayon and other CHEMICAL USES OF WOOD PULP

Rayon Industry Consumed 195,074 Tons of Pulp

● In 1939 the rayon industry of the United States consumed 195,074 tons of wood pulp, according to a recent report of the Bureau of the Census in its Census of Manufactures for 1939.

The 1937 consumption of wood pulp in rayon manufacture was 170,492 tons. The increase in two years was 24,582 tons or 14.4 per cent.

The consumption of cotton linters in 1939 by the rayon industry (chiefly acetate process) was 106,366,059 pounds (53,183 tons) against 94,256,085 pounds (47,128 tons) consumed in 1937, a gain of 6,055 tons or 12.8 per cent.

DuPont Buys Lots of Wood Pulp

● In a recently issued statement showing the large volume of farm products purchased annually by the several departments of E. I. du Pont de Nemours & Co., of Wilmington, Delaware, it was stated that the company purchased 70,500 tons of wood pulp in 1939.

Of purified cotton and cotton linters the company purchased 29,700 tons in the same year.

Asks Industry to Bleach Cotton Linters for Explosives

● In a letter sent to pulp and paper manufacturers on September 18th, E. W. Tinker, executive secretary, American Paper & Pulp Association, said,

● A large and reputable firm of cotton linter dealers has requested that the American Paper and Pulp Association inform its membership with regard to the national situation in the field of nitrocellulose explosives.

At the present time, Army and Navy specifications permit only cotton linters to be used as a base for these explosives. The normal capacity of American smokeless powder plants is, roughly, 350,000 pounds of powder daily requiring approximately 175,000 pounds of linters. This capacity is being doubled and the new requirements will be about 350,000 pounds of linters daily.

Since these linters must be sold to the powder plants in bleached form and the capacity of the existing bleaching plants which engage in this business is apparently far short of the new requirements, certain individual paper and pulp mills may be interested in using such excess bleaching capacity as they may have for bleaching cotton linters. It seems likely that if this is not done, new plants will be constructed to meet these needs.

It is quite probable that such a venture may prove profitable for suitably located mills. If you are interested, the Association will be glad to arrange for your meeting with the cotton linter dealers for further details.

Army Specifications for Cellulose for Nitrating

Material—Bleached Cellulose, washed, short-fibered.

Detail Requirements.

1. Moisture—Maximum 7 per cent, no minimum.

2. Alkali Soluble — To contain not more than 5.0 per cent of material soluble in 7.14 + 0.1 per cent sodium hydroxide, unless a lower solubility limit is specifically included in the contract.

Extractive Matter.

3. It shall contain not more than traces of lime, chlorides, sulphates, and hypochlorites.

4. Ash Content—0.5 per cent maximum.

5. Absorbency—Should readily absorb nitrating acids.

6. Cuprammonium solution of samples of material should have viscosity at 25°C as a specified in contract. Data to be furnished by manufacturer.

Japanese Staple Fiber Pulp Quality Declining

● "In view of the decline in the quality of domestically produced staple fiber pulp, the Pulp Adjustment Association has decided to effect an inspection of quality with a view to checking any further deterioration of quality," said the Japan Chronicle in a news story published September 4th.

"The Association previously gave warning to staple fiber pulp manufacturers pointing out the recent deterioration of quality, but seeing that such a mere warning is insufficient, the Association has decided to take more drastic measures.

"The Association sent a notification to member companies on September 2nd to the effect that staple fiber delivered from manufacturers to staple fiber companies must be inspected by the latter according to the table of analysis specially made by the Association.

"Any pulp, the quality of which was found inferior to the table of analysis, will hereafter be treated as goods of lower grade. The results of such quality inspection of pulp will be submitted to the Association by whom reports will be made to the Commerce Department and others concerned. The Association thus intends to prevent the deterioration of quality staple fiber pulp made in Japan."

Restrict Pulp Quotas In Japan

● All applications for allotments of rayon pulp were granted during August, according to authoritative information in Japan. In September, however, the import permits granted to some firms represented only a little more than half the quantity actually applied for, but at least one concern obtained permission to import the amount requested.—American Embassy, Tokyo.

Japanese Rayon Exports Down

● Japanese rayon yarn exports during July represented a drop of 50 per cent compared with June shipments as a result of a decline in sales to India, according to Japanese press reports.

The Rayon Producers' Association and the Rayon Exporters' Association reportedly have decided to reduce the monthly production of rayon yarn for export (and miscellaneous rayon goods) to 20,000 cases in September and October, and have also fixed minimum quotations on exports of rayon yarn at 70 yen per case. Rayon production during the first half of 1940 averaged 60,000 cases monthly. (Case equals 100 pounds) —American Commercial Attache, Tokyo.

Industrial Rayon Expanding Continuous Yarn Plant

● The Industrial Rayon Corporation recently announced its acquisition of 1230 acres (nearly two square miles) of additional property adjoining its Painesville, Ohio, plant.

Industrial Rayon is at present expanding its Painesville plant where the world's first installation of equipment for continuous spinning and processing of viscose rayon yarns has been in operation since December, 1938. When the expansion is completed early next Spring this plant will have an annual production capacity approaching 20,000,000 pounds per year.

A $4,000,000 expansion program is moving forward on schedule at Painesville, where the number of continuous spinning machines is being increased by 50 per cent.

Eliminate Stretch in Viscose Rayons

● A boon to the viscose rayon industry is the development of a process for eliminating stretch in viscose rayon and spun rayon materials. The new process was developed in Switzerland and is controlled in the United States by Cluett, Peabody & Company, Inc., who developed the "Sanforized Shrunk" method of preventing shrinkage.

Known as "Sanforset" the new process is applied right after the material is dyed. It is permanent and cannot be washed out. It is said in the rayon industry that the tendency of viscose rayon filament yarn and spun rayon goods to stretch, especially in men's sport shirts and outfits had become a serious problem.

Now, this defect of viscose is said to have been eliminated and when a tag is attached stating that the material has been "Sanforized-Shrunk" and "Sanforset" treated it will neither shrink nor stretch out of shape.

At present the process is not recommended for acetate rayons. Indirectly the process will aid the pulp industry for almost all the viscose rayon used is made from wood pulp.

Italy Obtaining Rayon Pulp From Scandinavia

● The entry of Italy into the war on the side of Germany seems to have had little, if any, adverse effect upon the activity of Italian artificial fiber mills during that month, apparently because their products will be in greater demand than ever for Italian consumption as long as the country remains cut off, as at present, from foreign sources of raw cotton and other natural fibers upon which the Italian textile industry has always been so largely dependent. The domestic demand can now be counted upon to absorb a larger percentage than ever of the country's artificial fiber production—particularly of the output of staple fibers—and it is not impossible that the entire output may be needed for domestic consumption if overseas communications should remain severed for a long time. As far as can be learned, the rate of activity of these mills was not reduced materially during June.

Substantial amounts of chemical pulp appear from all reports to be reaching Italy via Germany from the usual sources of supply, Sweden, Finland, and Norway, and competent observers appear to see no reason to fear that this channel of communication may be cut off during the war as were earlier the usual water routes to the Scandinavian countries. Whether the arrivivng shipments have been fully as large as in normal times cannot be learned from available sources of information, but they appear to offer assurance of at least enough materials to keep the fiber mills in operation at a high rate of production. No shipment of chemical pulp from Canada or the United States has been received since Italy entered the war. (American Consulate, Milan).

A Plastic Puzzle

We make plastics out of cotton,
  We make plastics out of milk,
We make them out of wood-pulp,
  We make them out of silk.

The milk ones look like woolen,
  The wood-pulp ones like glass,
The plastic glass like cotton,
  And the silks as paper pass.

We can take a little water,
  Some coal, and add some air,
And soon we have a toothbrush
  Or silk stockings for the fair.

A surface which looks like metal
  From photographic film is made,
A coat which looks like rabbit,
  From cornstalk pulp is sprayed.

From goldenrod comes "rubber"
  For a rain-coat or a tire,
While with plates from rubber plastic
  False teeth we can acquire.

If you think you know what's in it,
  Be it furniture, clothes, or paint,
Just let us tell you surely
  That what it seems, it aint!

—H.M.F.

Hosiery Makers Watch American Japanese Situation

● With America the largest user of Japanese silk, hosiery manufacturers are concerned with the change in the political relations between the two countries, according to a report from New York. It is possible that high grade lisles and rayons will have to be substituted for silk if conditions become increasingly favorable, the National Association of Hosiery Manufacturers states in a special letter to its members.

Although it is generally recognized that nylon will find a steadily expanding use in hosiery, it will not be large for another two years. While silk may be expected to be used in diminishing amounts, the industry will continue for some time to be a very substantial user of the commodity. There is always a probability, the statement adds, that a serious boycott of silk goods may develop among consumers because of dissatisfaction with the developments in the United States-Japanese political relation. Such a boycott could be much larger than in 1937 and still not assume serious proportions, the letter continues.

Because of Japan's need of foreign exchange in this country, it is believed Japan would curtail or abandon the American market only with extreme reluctance. Prior to 1939 the annual dollar value of Japan's sales of raw silk to the United States was around $90,000,000, while value of silk exported to this country last year totaled $115,000,000. Of this amount, about 93 per cent was used in the hosiery industry.

Hammermill President Dies in Erie

● Ernst R. Behrend, president of the Hammermill Paper Company, Erie, Pa., which he founded 42 years ago, died Sunday at his home in Erie of a heart ailment from which he had suffered for a year. He was 71 years old.

Born on March 29, 1869, in Coeslin, Germany, Mr. Behrend was the son of the late Moritz Behrend, a leading German papermaker. He arrived in the United States on Washington's Birthday in 1896, and shortly thereafter became a naturalized citizen.

With his father and his brother, Dr. Otto F. Behrend, he founded the Hammermill Paper Company in 1898, and became a pioneer in the manufacture of fine writing papers from the cellulose fibers in wood. His founding of the first all-sulphite process paper mill in this country marked the start of a new trend in the nation's manufacture of business papers. He was the inventor of high-speed watermarking, one of the paper industry's most important contributions.

Mr. Behrend leaves a widow, Mrs. Mary Brownell Behrend; a daughter, Miss Harriet Ellen Behrend; his brother, Dr. Otto F. Behrend, treasurer of the Hammermill Paper Company, and a sister, Mrs. William T. Brust, all of Erie.

Elbert Owens Marries In Everett

● Elbert Owens and Miss Marjorie Larson were married in Everett on September 20th. Mr. Owens has been employed in the machine room of the Everett Mill, Pulp Division, Weyerhaeuser Timber Company, since the plant began operations in 1936.

His father, A. A. Owens, is a sulphite cook for the Soundview Pulp Company at Everett.

Pioneer Rubber Issues Three New Catalogs

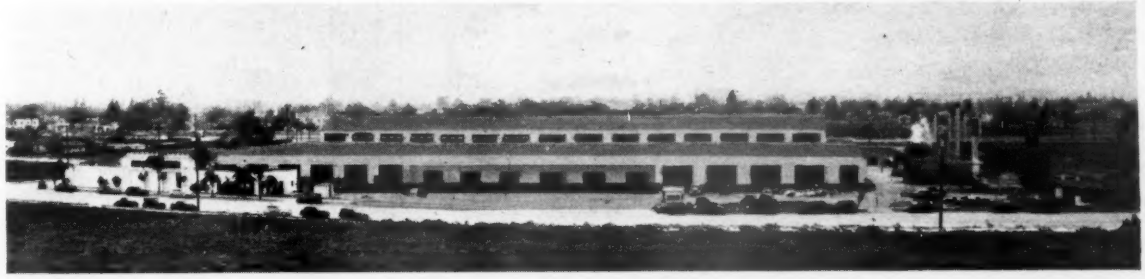
● Most recent data on rubber belting, hose, packing and other mechanical rubber goods is contained in three new catalogs, just published by Pioneer Rubber Mills, 353 Sacramento Street, San Francisco.

Catalog 40-H is a 36-page book describing the complete line of Pioneer Hose. Included in this catalog are data that will be of interest to all users of hose, as well as complete descriptions of construction and application of many new types of hose of recent development.

Catalog 40-B contains information on Pioneer Belting, including rubber belting for transmission, conveyor use and elevator belting. Many helpful tables are contained in this catalog.

Catlog 40 is a general catalog of the entire line of Pioneer mechanical rubber goods and is suitable to those organizations interested in packing, rubber goods, etc., as well as belting and hose.

The manufacturer invites inquiry from interested concerns and asks that requests for catalogs be made on business letterheads.



THE FRY ROOFING COMPANY'S plant at Compton, California, as it is today after rebuilding following partial destruction by fire last year.

Stock Preparation

The Hydrafiner vs. the Beater

by EDWARD M. ROOT*

STOCK preparation is an extremely important phase of the successful operation of any paper mill. The study of this subject is an exhausting one and one which has occupied the attention of paper makers ever since man stopped chiseling his thoughts in stone. Centuries later, when the holland beater was invented, came one of the first real advances in the art of paper making. Certainly, with the advent of the fourdrinier, it proved to be one of what might be termed the two most important steps in the advancement of this art. It stepped up production many times and improved uniformity by eliminating tedious hand manipulation of stuff preparation equipment.

As time went on, increased production demands and the need for cheaper operation brought about many changes in the paper machine, but, aside from minor changes, the holland beater is essentially the same today as it was when the first beater roll turned over in its tub.

Now, someone has said that, given time and power, a beater can be made to prepare any kind of stuff. This is, no doubt, true. However, modern production needs and cost increases have placed on the beater a burden which it has for the most part been unable to cope with. Years ago the jordan was invented for the sole purpose of preparing stock faster and more uniformly than it could be prepared in the beater. It performs a valuable function and, for some grades of paper, it always will. However, it is essentially a cutting instrument and it is difficult to duplicate beater-prepared stuff with a jordan.

Within recent years we note the advent of the high speed refiner and a number of other types of refining equipment, the purpose of which has been to fill the need for increased efficiency in the beater room. That this has been accomplished to a marked degree is proven by the fact that more and more installations of this new type of equipment are being made all the time.

One of these is the Dilts Hydrafiner which was offered on the market about 1932. Because I don't feel that the general subject of stock preparation can be covered adequately in the time allotted and also because I don't feel myself qualified to treat the subject in all its ramifications, we will confine this paper to a discussion of the hydrafiner versus the beater.

Design of Hydrafiner

● I don't wish to burden you with a long dissertation concerning the design features of this machine except to say that it consists primarily of a conical plug rotating within a conical shell. In this respect it is not unlike a jordan. However, the similarity ends here for the design of plug and shell liners, speed, operating characteristics, and action on the stock being treated differ definitely from the jordan. Refining as we do by impact due to high surface speed, by brushing due to bar combinations, by hydrating due to internal pressure, and by extreme agitation we approach closely the effect of the beater but accomplish this effect in a very much more efficient manner.

Installation of the hydrafiner can be made either for continuous treatment, either singly or in combination with other hydrafiners or jordans, or for batch circulation where a hydrafiner is hooked in conjunction with one or more beaters or chests. Both of these methods of operation have proven successful, especially in cases where there was a lack of beating capacity and the purchase of additional beating equipment would mean overcrowding of the beater room or the erection of a new building. The action of the hydrafiner, which is not unlike that of a beater, together with its compactness and high capacity solves this problem and gives an additional benefit of more work per unit of power input. As we all know, the conventional beater can be criticized in its efficiency due to the amount of power necessary for circulation, about 30 per cent of the power applied. As for the relative amounts of mechanical work done on the fibers, we might consider the inch cuts and wet beating effect obtained by a beater roll and bedplate of average size versus a hydrafiner. Let us assume that we have a beater roll of 62-in. diameter by 60-in. face having 70 bars each ½-in. thick rotating at 115 r.p.m. In our bedplate we might have 40 bars each ¼-in. thick making a total width of 10 inches of bar. From the formula set up by Milne we would have 19,320,000 inch cuts per minute and a wet beating effect of 2,415,000 sq. in. A typical hydrafiner combination of plug and shell liners would have 50,220,000 inch cuts per minute and a wet beating effect of 15,956,100 sq. in.

This indicates that the hydrafiner has something like 2.6 times the effectiveness of our beater as far as inch cuts is concerned and about 6.6 times as much wet beating. In actual practice this holds pretty true for we find that the hydrafiner will do the work of from two to five or six beaters depending on the service. Batch circulation of the hydrafiner with the beater preserves the undeniable flexibility of the beater for treating small batches of stock, and we then have a tub and roll for slushing, soaking, and cooling in combination with a unit giving a concentrated high speed roll and bedplate effect doing in a given time several times as much work as could be done with the beater alone. This is fine for comparatively small tonnage operations where raw stock is coming into the mill in a dry or partially dry state such as rolls, laps, sheets, or slabs. In large scale operations it has been shown to be more economical to pulp the dry stock in a high-efficiency pulper and discharge the slush stock to cycling chests which are agitated by some efficient method. Agitation can be accomplished in two or three different ways with an expenditure of from about 10 h.p. to 20 h.p. which allows us to use the cycling chests for mixing and blending of stock, color, and chemicals. This is cheaper than a beater roll can do it and we can thus dispense with the beater entirely. In mills using slush stock only the pulper

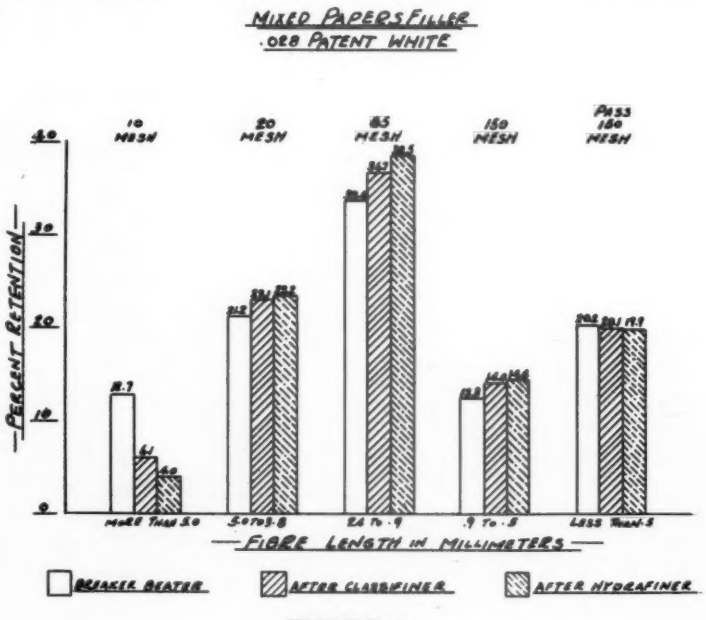


FIGURE 1.

*Dilts Machine Works, Fulton, New York, Division of the Black-Clawson Company, Hamilton, Ohio. Presented at a Dinner Meeting sponsored by the Pacific Section of TAPPI, Heathman Hotel, Portland, Oregon, October 8, 1940.

is, of course, unnecessary but the cycling chests can still be used in conjunction with the hydrafiner thus eliminating the need for beaters.

Operating Characteristics

● Let us turn now to some of the operating characteristics of the hydrafiner on different types of stocks. To begin with we might take folding box board. Filler stock for folding box board is for the most part made from old papers. Because these old papers have been processed at least once, the fibers have already been cut to a greater or lesser degree, and box board filler properly prepared should be as free and as long fibered as the raw papers will permit. It is necessary, then, to process these old papers in such a way as to result in a well-defibered stock retaining at the same time as much of the original fiber length as possible. If this is done we get a free stock which permits of a faster rate of formation on the cylinder machine due to faster drainage. The filler stock approaches more nearly the liner stock in freeness, resulting in a better bond between liner and filler and fewer "blows." The resulting filler stock has a higher strength, and sheet formation is more uniform due to the absence of undefibered particles. Complete defibering results in increased drying capacity because the undefibered particles hold a ring of water around them which resists drying and also causes cockling of the board. Increased drying means either a saving in steam costs or increased production, or both. A free, long fibered stock gives the final sheet a better bulk. The hydrafiner is admirably suited for producing this type of stock because it may be so set up and operated as to produce a vigorous scrubbing action with little or no cutting. It can be placed in series with some other part of the system and operated so as to permit a large amount of recycling with the plug backed off, or the plug can be set up and the stock passed through only once or twice. Both methods have proven themselves through the test of time.

A typical mill making folding box board produced some interesting figures in this connection. Over a period of a 38-hour run in which board was made at the rate of 132 tons per day, filler stock was prepared at the rate of nearly 6,000 lbs. per hour with these figures; breaker beater, 1.37 hp./ton; Cowles Classifiner, 0.57 hp./ton; Hydrafiner, 0.73 hp./ton. Adding the power necessary to drive a stock pump and a water pump, we have a total filler stock power consumption of only 3.02 hp./ton/day. The breaker beater here mentioned is an old type unit. A modern beater would reduce this figure of 1.37 hp./ton to a value of about 1.0 hp./ton. It would be well to mention at this point that the terminology of hp./ton/day is used in this paper because it is the term most used in talking of power. One should bear in mind, however, that hp. hours or KWH per ton per day would be a better and truer terminology, since it is the time for which a given amount of power is used that determines the cost. We have these figures and they are convincing, but, as said before, we are using hp per ton per day because it seems to be more easily appreciated. We do not attempt to claim that the hydrafiner did the whole job in this case, but it is significant to note that no further jordaning is used on folding box board filler in this mill. Filler stock strength tests showed a freeness of 260 Canadian one of these and is the one we use. It Standard, a Mullen of 39%, a 110% consists of four stationary buckets, each Tear, and a hand sheet shrinkage of set a trifle lower than the preceding one. 2.89% which, in itself indicates good hy-Each bucket is provided with a motor dration. Fiber classification tests showeddriven paddle for agitation, a screen, no increase in "fines" from breaker beat-and an overflow spout to the next bucket. er to paper machine, whereas the 10Various screen combinations can be mesh fraction was reduced from a valueused. The screens are arranged accord- of 13% after the breaker beater to 4%ing to mesh with the coarsest mesh in at the paper machine (See Fig. 1). the first compartment. When making a

At this point it might be well to de-test water flows through the unit at a scribe briefly what is meant by fiberdefinite rate. A known amount of stock classification. There are some three test-is introduced into the first compartment. ing instruments on the market for meas-During the 15 minute running period uring the degree of cutting to which pa-the fibers which are too short to be held per fibers have been subjected duringback by the screen pass through and processing. The McNett Classifier isoverflow into the next compartment and

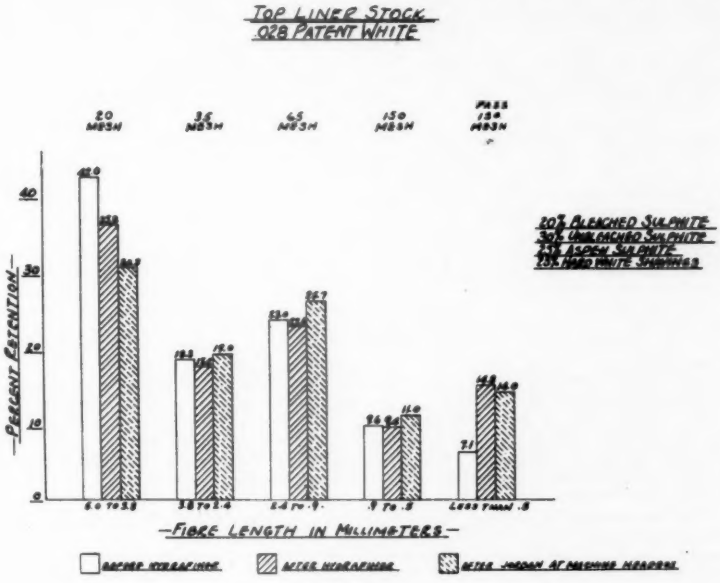


FIGURE 2.

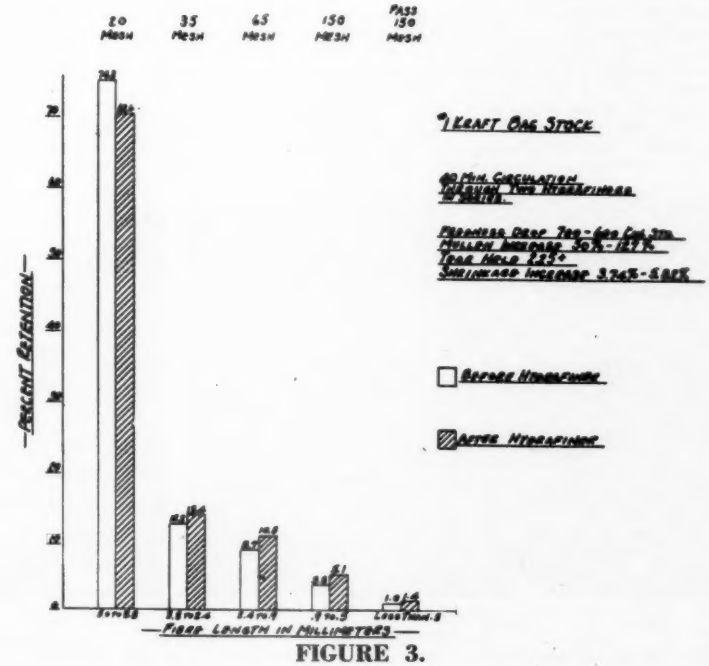


FIGURE 3.

so on. Those fibers which are too short to be retained by the finest screen pass to the sewer. The various fractions are then dumped through a filtering medium, dried, and weighed. From the figures thus obtained can be determined the percentage retained by each of the four screens. Since we obtain four fractions directly and a fifth by difference, we have a good measurement of the degree of cutting or shortening to which we have subjected the stock.

In this same mill top liner beaters of 2000 lbs. each were dropped on a cycle of one hour and 55 minutes when making .028 Patent White with a batch hydrafining time of 70 minutes. Two beaters used 0.84 hp./ton, one hydrafiner used 0.95 hp./ton, one jordan used 0.76 hp./ton, two pumps brought total power up to 2.93 hp./ton/day. Furnish consisted of bleached and unbleached sulphite, aspen sulphite, and hard white shavings. Strength figures showed 435 Freeness, 69% Mullen, 123% Tear, and 6.24% shrinkage which here, as in the filler stock shows hydration. Fiber classification again showed mainly brushing with only 14% passing the 150 mesh screen (See Fig. 2). This value didn't change materially as processing continued but the 20-mesh fraction dropped from 42% to 30% showing that we were defibering the stock and bringing the coarse fraction and unbroken material down into papermaking fibers without increasing the amount of fines, and thereby keeping our whole fiber longer. Total power consumption, including under liner and bottom liner amounted to 10 hp. /ton/ day which we think is very good. This mill attributes a large part of their power saving to the hydrafiner and claims almost fantastic savings over conditions prior to the installation of their hydrafiners of which they have eight.

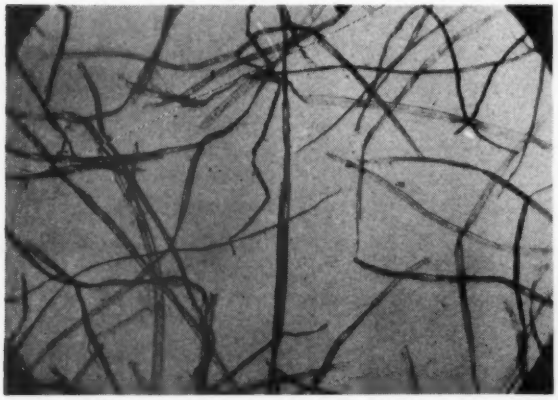
The hydrafiner also finds its place in the manufacture of test liner. For example, one mill has two 130" seven cylinder machines trimming 115" which run most of the time on .016, 63-64-lb. test liner averaging 110-lb. test. On one of them conditions were as follows: Top liner furnish of 100% kraft papers. Liner is furnished in one beater and discharged through a Howell extractor bedplate to a chest from which it is pumped to another beater and circulated through a hydrafiner. When all specks are removed and the stock has been treated to the required freeness, it is dumped to the jordan chest from where it passes to the machine via one jordan. Filler stock consists of 100% No. 2, or old corrugated except when they run short of corrugated. Then the furnish becomes 50% corrugated and 50% hard mixed papers. It is pulped in a breaker beater and sent to a settling trough where junk is removed by a Cowles Clissifiner. From the thickened stock chest the stock is pumped by a 501-hp. pump to a hydrafiner under 10 to 12-lb. pressure. The hydrafiner discharges into a three-compartment headbox 14 feet above the unit. The gates in this headbox are set for machine requirements and the excess stock returns to the thickened stock chest to be recycled. Stock to the paper machine passes through one jordan. This paper machine operates at a speed of 375 f.p.m. wih only 2½ points of top liner and no under liner or bottom liner. Note that no kraft pulp is used in this sheet. Average tonnage per day is 135 tons. On the other machine conditions are as follows: Top liner furnish has always had a percentage of kraft pulp to hold the test and obtain formation using three beaters and two jordans. Filler stock equipment consists of a breaker beater and classifiner, like the first machine, and four filler finishing beaters and three jordans. Here again the furnish has always contained a percentage of kraft pulp or papers to hold the test. Best possible speed has been 250 f.p.m due to formation and it has been necessary to carry 5 points of the test. The saving in top liner on the first machine over the second amounted to $4.00 per ton. At a rate of 135 tons per day, this amounts to $540.00 per day. This will pay for a hydrafiner complete with motor and starting equipment in eight days and does not include power savings. So much for board.

On Kraft Bag Stock

● Let us now turn to another type of stock such as kraft bag. This stock demands a much more vigorous treatment to prepare than does folding boxboard. Hydration is extremely important but fiber length must be retained. Only enough cutting can be permitted to give proper formation on the paper machine wire and freeness must be kept from dropping too low else drainage time will increase with an attendant decrease in paper machine speed. As a fair example, let us consider a manufacturer of specialty papers who makes a great deal of No. 1 kraft bag and wrapping. This mill is a former newsprint mill which, like a lot of others, was crowded out of the newsprint game by the advent of large high-speed news machines. As a a first step, one machine was changed over to specialties. However, kraft pulp required such a deal of treatment as to render it impossible to keep up with the paper machine with three old, worn-out beaters. At times the machine was down as long as six hours waiting for stock. Accordingly, an investigation was launched which culminated in the purchase of two hydrafiners which were powered with 200-hp. motors and were hooked in series with three beaters. Piping is so arranged that either or both hydrafiners can be used as the occasion demands. Now this mill has no down time waiting for stock and makes from 50 to 60 tons of No. 1 kraft per day with hydrafiner power input of 8-12 hp. per ton per day. Considerable strength data is obtainable of which the following is representative: 40 minutes treatment with two hydrafiners, a freeness drop of from 700 to 600, mullen strength in the beater room of 120-130%, tear well above 200%. Two jordans are used in series but are backed off considerable more than was formerly the case. Indeed, they are sometimes dispensed with entirely. The final sheet easily has a mullen well over 100% with a 200% tear. Paper has been made on test runs with a mullen of 150%, but this is usually well above their requirements, and a lower mullen permits a higher tear. A typical fiber classification test after the equivalent of 12-14 passes through a hydrafiner is shown in Fig. 2. Note that even after this much treatment there was still a retention of 69.6% on the 20-mesh screen and the amount passing the 150-mesh screen increased by only .3%, from 1.1% to 1.4%. The high strength increase, coupled with the lack of evidence of cutting, makes this data seem truly remarkable, but it is, indeed, the rule rather than the exception. Figs. 4, 5, 6 and 7 show photomicrographs of samples of the various fractions. Certainly there is little, if any, evidence here of severe cutting or even bruising. As a matter of fact, upon examining slides of raw and hydrafined fibers under the microscope (See Figs. 8 and 9) we were unable to see any difference.

Continuous Hydrafining

● Kraft stock can be processed equally well by continuous hydrafining as one large eastern manufacturer has proven



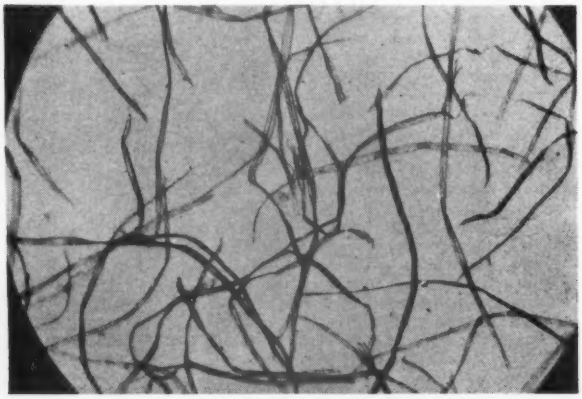
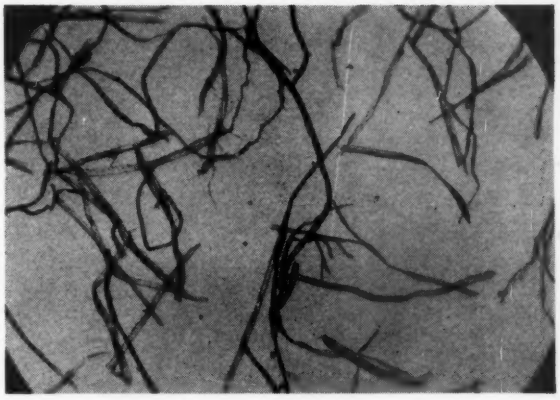


FIGURE 4, on the left, shows No. 1 Kraft Bag Fraction Retained on 20 mesh screen (X 35) 5.0-3.8.
FIGURE 5, on the right, shows No. 1 Kraft Bag Fraction Retained on 35 mesh screen (X 35) 3.8-2.4.



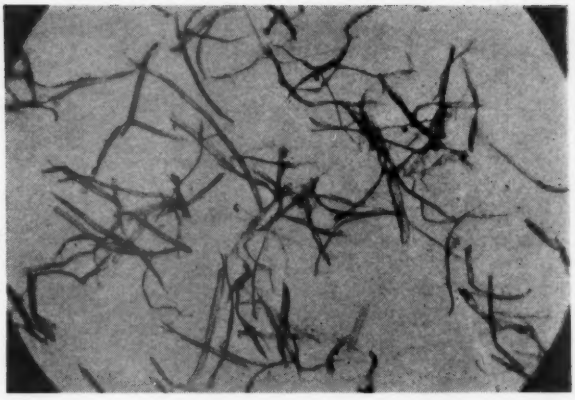


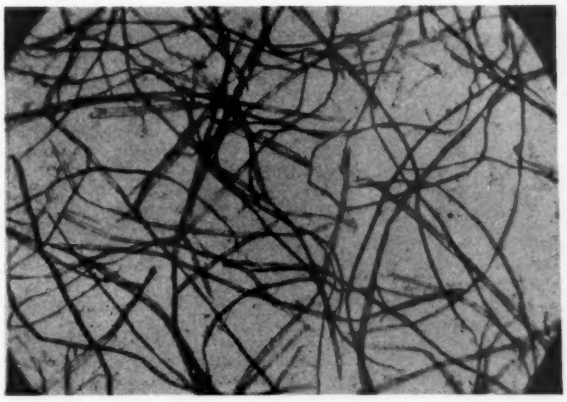
FIGURE 6, on the left, shows No. 1 Kraft Bag Fraction Retained on 65 mesh screen (X 35) 2.4-0.9. FIGURE 7, on the right, shows No. 1 Kraft Bag Fraction Retained on 150 mesh screen (X 35) 0.9-0.5.

beyond doubt. Two machines, each making a variety of kraft papers, together needed some 40-odd beaters. A hydrafiner was purchased and its operating characteristics were studied with an eye to saving processing power and obtaining a more efficient beater room. The idea proved itself with the result that each machine now has on it four hydrafiners and four jordans with one mixing beater and a pulper. Stock is pulped in the pulper and dumped to a chest. A batch is then pumped into the mixing beater where color and all chemicals are added. It is then dropped to a chest from which it is sent through a consistency regulator and straight through four hydrafiners and three jordans in tandem to be discharged into the machine chest. It is sent to the paper machine through one machine tender's jordan which touches up the stock for formation. Consistency and back pressure on the refining units are the chief factors watched in control. This system has had a net result of producing more uniform stock at a saving in power and has also brought about an increase in paper machine production.

While still in the specialty mill mentioned previously, let us consider a beater room survey made during a run of 22-lb. sulphite waxing. As you know, this kind of paper calls for a smooth, even sheet, well closed up, yet having a well drawn out fiber. On this order, the furnish for which called for bleached sulphite, only one hydrafiner was used, since this stock requires nowhere near the treatment required by kraft. Throughout the order, which ran 32.5 hours, 36 beaters of virgin pulp and nine beaters of broke were dropped. Virgin pulp was batch hydrafined 25 minutes while broke was given one pass through the hydrafiner enroute from beater to chest. Power figures for the run show 1.98 hp. per ton in the baters, 2.79 hp. per ton in the hydrafiner, and 11.1 hp. per ton in the jordans, making a total of 15.9 hp. per ton per 32.5 hours. During the hydrafining period mullen strength rose from average 50% to average 90%, which is nearly 100% rise. Tear dropped from 162% to 126%. Fiber classification data (Fig. 10) showed that only 8% of the fiber would pass the 150-mesh screen while 60% was retained on the 20-mesh screen. Certainly this shows hydration without extreme cutting. The finished sheet had a good mullen of 65% with what was termed an excellent opacity. The batch system, as typified by this mill, proves its flexibility undeniably when we stop to consider that they use the hydrafiners on all their specialty grades involving the use of unbleached, semi-bleached and bleached krafts as well as bleached and unbleached sulphites. Operation is carried on using one or both hydrafiners for periods of time, ranging from 10 to 35 minutes. When they return broke to the beater room, it is slushed in a beater and sent directly to the beater chest in a measured quantity via one pass through a hydrafiner, all specks being reduced to fibers in the one pass.

Another mill making a large variety of groundwood book papers uses a hydrafiner hooked to two beaters to prepare sulphite and bleached kraft pulps. While circulating one beater through the hydrafiner, groundwood pulp is drawn into the other beater. At the end of the hydrafining time, the valves are switched and a predetermined amount is discharged into the beater containing the groundwood. Inasmuch as a whole beater was hydrafined, enough stock has been prepared for two or three beaters of the final furnish. Here again a problem in beating capacity was solved. No room was available for additional beaters, but the hydrafiner needed only a comparatively small space in the beater room basement.

And now as a final illustration of the wide variety of papers which can be processed in a hydrafiner, we would cite a manufacturer producing among other specialties a high grade tag sheet. This manufacturer was having trouble not only with beater room capacity, but also with stock uniformity, which varied so much as to be disadvantageous. Accordingly, he purchased a hydrafiner and uses it in conjunction with three beaters



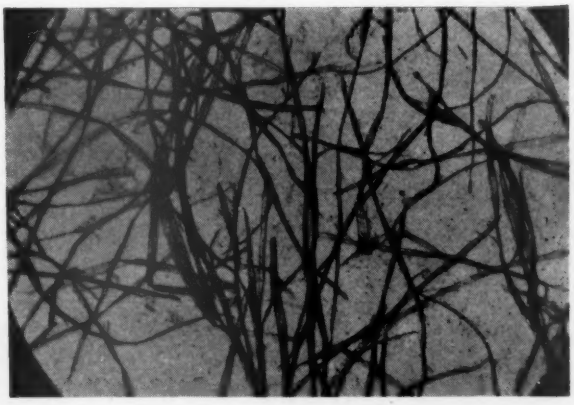


FIGURE 8, on the left, pictures No. 1 Kraft Bag Raw Stock (X 35) while FIGURE 9, on the right, shows No. 1 Kraft Bag after the Hydrafiner (X 35).

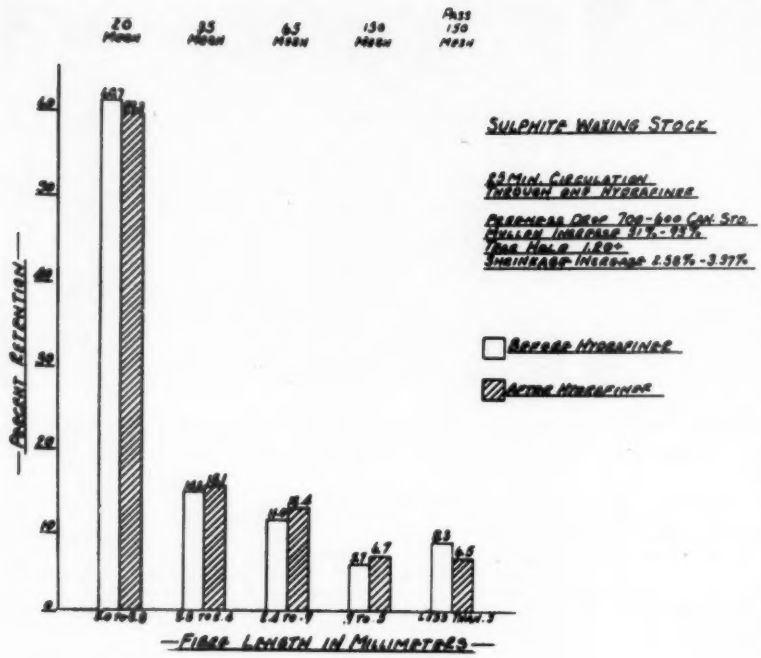


FIGURE 10.

and two jordans. Prior to installing the hydrafiner, he used five beaters with the rolls down hard and set the jordans well up. Now he uses three beaters with a light brush, circulates through the hydrafiner, and has backed off the jordans, using them only to touch up the stock as a final bit of preparation. Besides increased uniformity, he reports an approximate 20% increase in production and all physical tests have risen.

The foregoing has, we hope, served to describe some of the work which can be accomplished with the hydrafiner. In this paper we have touched briefly on folding box board liner and filler, test liner board both liner and filler, kraft bag, and specialties such as sulphite waxing, book, and tag board, and we feel that these represent a fair cross section of different types of mills having divergent needs. We work constantly with the mills in an effort to improve our equipment and to make operating conditions easier and more efficient, for in endeavor like this lies at least part of the answer to good paper machine production of paper and board of a uniformly high quality at a reasonable cost. In and through our laboratory we experiment with new and better equipment design and methods of operation so that we may keep abreast of new trends in this interesting phase of paper manufacture. It has been a real pleasure to present this paper before this group of men.

American Can Promoting Milk in Paper Containers

● The American Can Company, largest container manufacturer in the world, has entered upon an aggressive and effective advertising campaign in the nation's trade journals to push the sale of milk in Canco's paper milk containers.

The advertisements stress the tremendous growth of the use of paper milk containers in the west, and point out that 55 per cent of the wholesale milk sales in the Los Angeles area are in paper. In the San Francisco area it's 50 per cent, according to the advertisements. In all the California areas where paper has been introduced, two million out of 5 million quarts each week are packed in paper, Canco says.

Included in the advertisements appearing in grocery journals are "Hot Selling Tips"; a little box with a good idea for promoting the sale of milk in Canco paper containers.

Roofing Rag Shortage Said to Be Developing

● Roofing rags are becoming scarce on the Pacific Coast and throughout the country says the Daily Mill Stock Reporter of New York in the October 4th issue. Quoting:

"Apparently roofing felt mills on the Pacific Coast are beginning to feel the pinch in roofing rag supplies, judging from inquiries coming from them to the East for available rags. West Coast mills are in the market for any lots of spot dark cottons or other foreign roofing rags which may be held by importers in New York or elsewhere along the Atlantic seaboard, provided, of course, they can effect purchases within price limits they care to grant. These mills are inquiring also for waste paper.

"However, very few roofing rags of foreign origin are held on the spot in the East or anywhere in the United States. Import houses with few exceptions cleaned out their accumulations about a year ago, and meantime due to excessive freight rates and insurmountable difficulties in getting rags from almost any part of Europe, they have brought in only small amounts of roofing stock. Inquiries from the Pacific Coast infer that mills there are feeling the dearth of imports from Japan and China, which, according to Government figures, have dropped off to practically nothing.

"More and more, members of the trade are coming to believe a dire shortage of roofing rags is bound to develop if felt mills continue to operate at their present rate of six and seven days a week. With imports next to nil, the domestic supply cannot commence to fill the needs of consuming mills notwithstanding the substitution of wood fibre, waste paper and other substitutes. And market history has proven that when roofing felt manufacturers run short of rags they will pay almost any price to secure required supplies."

E. D. Jones Issues New Beater Booklet

● A new edition of the Jones-Bertrams Patent Beater Booklet, 64 pages, titled "A Study of the Beater," has been issued by E. D. Jones & Sons Company, Pittsfield, Mass.

Much valuable information by the author, Samuel Milne of Bertrams, Ltd., together with supplementary notes by Dwight E. Jones, acting chief engineer of the E. D. Jones & Sons Company, is contained in this interesting booklet. Comprehensive data regarding beater operation, comparative results of various types of beaters, different methods of furnishing beaters, formulas, charts, tables, etc. are fully described and illustrated. An invaluable handbook for mill men, it will be mailed upon request to E. D. Jones & Sons Company, Pittsfield, Mass.

Powell River Has Large Steam Plant

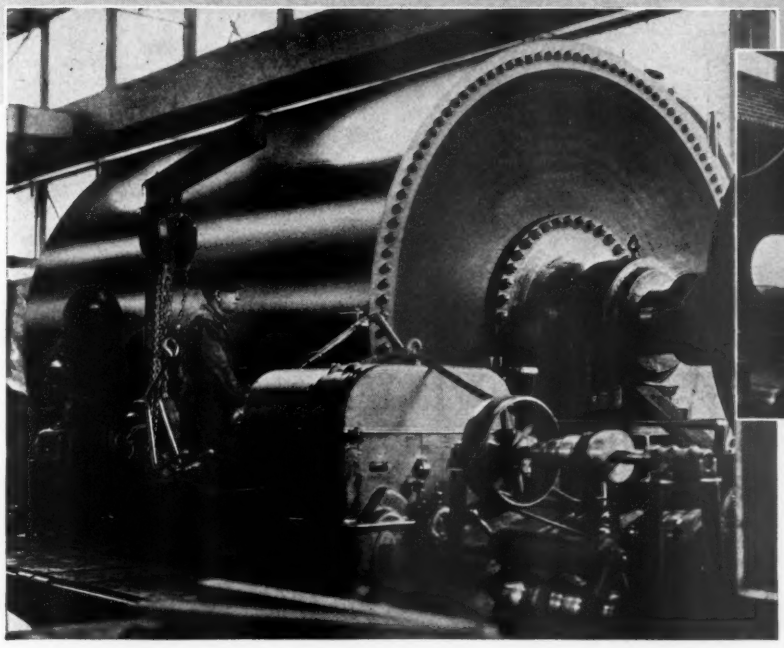
● Powell River "Digester," house organ of Powell River Company, contains some information regarding the battery of seventeen steam boilers that provide the heat and power at the biggest plant of its kind on the Pacific Coast.

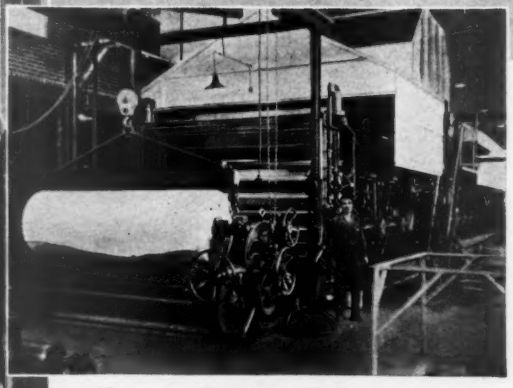
Over 6,000,000 pounds of steam each day is generated in the Powell River boilers. Most of the steam is consumed by the dryers in the seven newsprint machines, nearly a million pounds feed the digesters and the balance is distributed to the sawmill for the "niggers" and other subsidiary equipment, to the grinder room and to the townsite for heating purposes.

A total of 8,000 boiler horsepower can be generated.

Another vital duty of the steam plant at Powell River is its provision against low water periods and a consequent shortage of electrical power. Two turbo-generators, each of 3000 kilowatt capacity, constitute an integral part of the equipment and insure the continued operation of the plant in unusually dry seasons.

. . . another Puseyjones Combination Yankee Machine will soon go into regular operation.





Above is a Puseyjones Yankee Machine in operation.

At left is a special high-speed dryer Grinder for finishing and imparting the glass-smooth polish necessary in making fine M. G. specialties.

THE latest Puseyjones Combination Yankee Machine is now under construction for Compania de Celulosa de Filipinas, Inc., in the far-off Philippine Islands.

Built for the manufacture of high grade M. F. and M. G. specialty papers, this new Yankee machine is similar to a unit that has been in successful operation for Southern Advance Bag & Paper Co., Inc., Hodge, La., since early 1939.

Puseyjones Yankee Dryer Cylinders reflect the experience of nearly 75 years in producing paper-making machinery. Puseyjones special foundry and machine shop facilities permit the manufacture of Yankee Dryers of *all* sizes and highest standards of construction.

Let us give you the facts about the versatility and productive efficiency of the new Yankees built by Puseyjones craftsmen. Write us today.

THE SIGN OF TRADE MARK SUPERIOR QUALITY

THE PUSEY AND JONES CORPORATION

Established 1848. Builders of Paper-making Machinery. Wilmington, Del.

The Measurement of Wire Wear and Wire Life

by M. J. FRANKLIN*

FOURDRINIER wires constitute an important item of cost in the production of paper and in order to determine what may be done to improve this cost item a satisfactory basis for the measurement of wire wear and wire life is essential. The question: "How long did it run"? and "Why was it removed"? must be answered, and the accumulation of many answers to these questions can then serve as a basis for improvement — sometimes in operation and sometimes in the choice of the make or type of wire to be used on any particular paper machine.

No single figure has been found that will tell the whole story of the length of life of a paper machine wire, but we have chosen to use three: Two, well known to all, namely; "Life in days" and "Tons of Paper per Wire"; and one which measures the distance a wire travels, and in order to compare different machine wires we have considered the wire length. This figure may be called "Miles Run per Lineal Foot of Wire" and is calculated as follows:

$$\frac{\text{Machine Speed (feet/min.)} \times 1440 \text{ (min./24 hrs.)} \times \text{Life in Days}}{5280 \text{ (feet/mile)} \times \text{Wire Length in Feet}}$$

While no one of the three is a perfect yardstick for the life of a wire, the use of all three will cover most conditions. The three might be classified as follows:

(1) Life in Days—This is the figure commonly used by machine operators for comparing the wire life.

(2) Tons per Wire is indispensable in calculating cost figures.

(3) Miles run per foot of wire is far superior as an accurate measurement for comparing wire life and wire wear, especially where different machines are concerned.

If one can correctly answer the question "Why was it removed"? a great step has been made toward the solving of one's wire problems.

The following comments are based on an original study of 80 wires and a follow-up on 116 wires since the study was completed, the wires being taken from 12 different paper machines. These wires were purchased from nine different wire manufacturers, constituting two different types of weave, namely, standard and longcrimp.

Before discussing the reasons for wire removal from a paper machine, a suitable method for measuring the amount of wear is essential and this must be of such nature that it is applicable to any type. The measurement of wire wear wear are expressing in terms of percent, and the "Percent Wear" as determined in the manner to be outlined has been found to be a reasonably satisfactory yardstick of wire performance as far as life is concerned. Incidentally, it should be noted that all wear affecting the life of a Fourdrinier Wire takes place on the warp wires.

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"Per Cent Wear"

● The Per Cent Wear as used in this discussion is based upon two arbitrary assumptions which, however, seem to be well substantiated in actual practice. These are: (1) That the first 10% of the diameter of a wire is lost due to the flattening action of bending the knuckle during the weaving process, and during the first few rounds on the machine; and (2) That 80% of the diameter is the greatest amount of wire that can normally be removed before a wire will fall to pieces. The Percent Wear is then the proportion of the volume of the remaining wire removed to the total volume corresponding to the 70% thus considered to represent the full wear possible.

Starting six inches from the front edge, a sample about two inches square was cut every foot across the wire. Five knuckles on each sample were measured under a microscope and five different measurements taken on each knuckle as shown in Plate No. 1.

A = Length of worn area on bottom side of the knuckle

B = Width of worn area on bottom side of the knuckle

C = Thickness of the wire left on the bottom side

D = Diameter of the warp wire

E = Thickness of the wire left on the top side

$\frac{\sim}{||}\ \frac{AB}{4}$ = Knuckle area

It is desired from the above figures to find the volume of metal removed and its relation to the depth of wear. This is done by a series of graphical representations.

Graph 1

● The knuckle area is plotted against the knuckle length and in the opposite direction the depth of wear is plotted against the knuckle length. This gives two curves from which the knuckle area and depth of wear can be determined corresponding to any knuckle length.

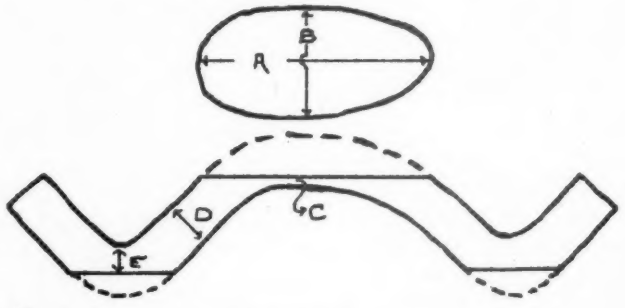
Graph 2

● Graph 2 is a graphical integration of the voulme of metal removed, corresponding to any depth of wear, as determined by the first graph.

Graph 3

● Graph 3 shows the percent diameter of the wires corresponding to any depth of wear.

PLATE NO. 1



A = KNUCKLE LENGTH

B = KNUCKLE LENGTH

$\frac{\pi AB}{4}$ = KNUCKLE AREA

D-C = DEPTH OF WEAR

$\frac{D-C}{D}$ = PERCENT DIAMETER OF THE WIRE

$\frac{D-E}{D-C}$ = PERCENT WEAR — TOP TO BOTTOM

Graph 4

● Graph 4 shows the percent diameter of wire corresponding to the number of cubic inches of metal removed per million knuckles as developed in graph two.

Graph 5

● This graph shows the final relation between the percent diameter of the wire and the percent wear figure, which is a percent of the total possible volume of metal that can be removed, based on the previous assumptions.

(1) That the first 10% of the diameter is removed almost immediately, so that this 10% of the wire diameter must be 0 percent wear in our calculations.

(2) That 80% of the available wire diameter, or 70% of the original is the greatest possible amount of wear, hence 100% wear.

In this graph—

Line A—represents the percent wear curve for 80-mesh Longcrimp wires.

Line B—represents the percent wear curve for 60-mesh Longcrimp wires.

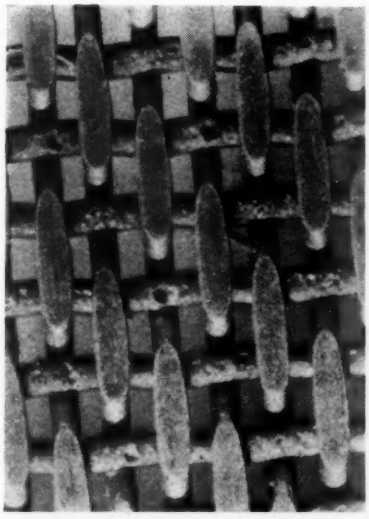
Line C—is the average of Line A and Line B. These two lines are so close together that Line C may be used for all Longcrimp wires.

Line D—represents the percent wear curve for standard 80-mesh wires.

After graph 5 has once been established, it is an easy matter to check the percent wear of each wire.

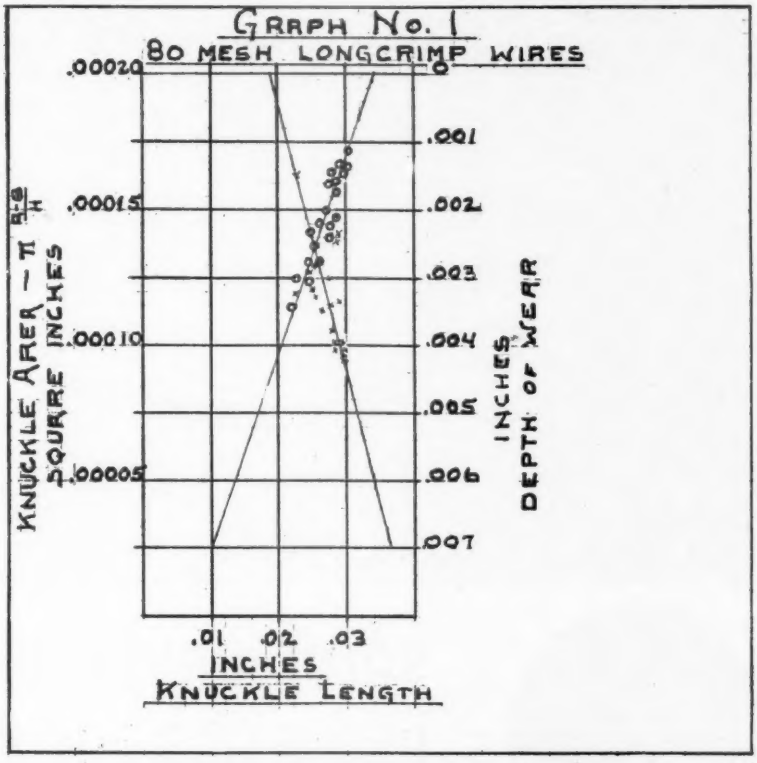
Graph 5 takes care of any longcrimp wire from 60 to 80-mesh and 80-mesh standard weave wires, which constitute those in which our mill is interested. Similar methods may be used to develop lines for this graph corresponding to any desired wire construction.

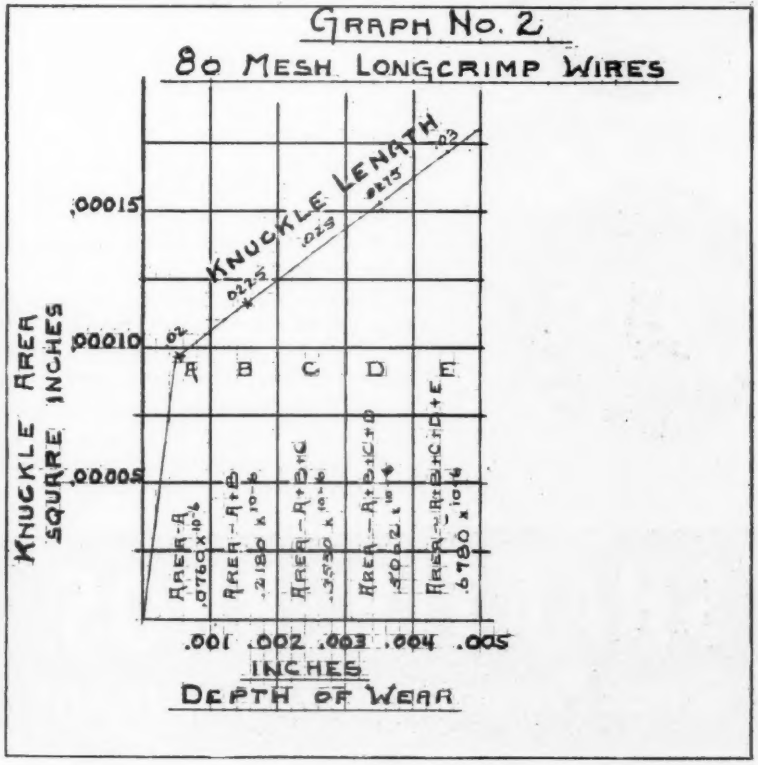
In making use of this method for determining wire wear in regular wire studies, our present procedure is as follows:

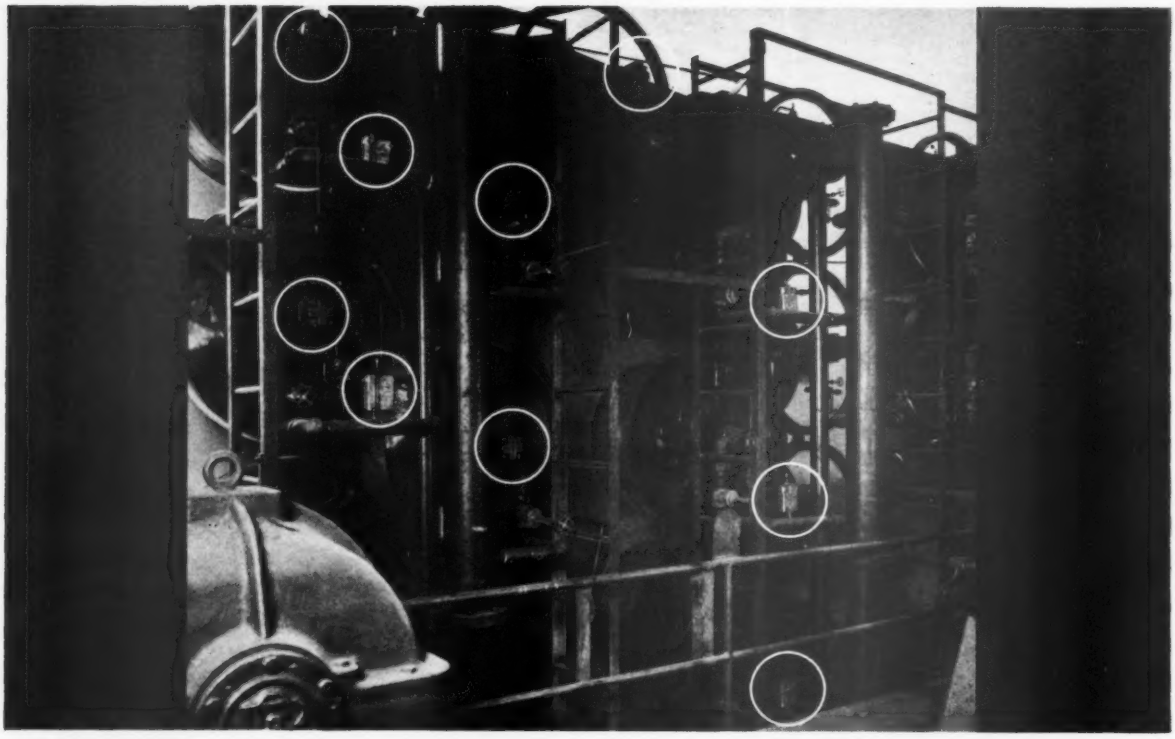


No. 1

Starting six inches from the front edge, a sample about two inches square is cut every two feet across the wire. It was found that a sample cut every foot was more often than necessary. Five knuckles on each sample are measured as previously mentioned, except that since the graphs have now been developed, measuring the area of the worn knuckle is no longer necessary. This leaves three measurements only to be made, viz: (1) Diameter of the warp wire; (2) Thickness







Coe Drainator . .. operating simplicity means high efficiencies at a substantially lower initial cost.

Shartle No. 72 Steamfit . . . made of brass . . . operates under any pressure . . . can be easily removed for inspection, even while the dryers are in operation.

SOLVE DRYER DRAINAGE PROBLEMS THE SHARTLE WAY

Install Shartle No. 72 steamfits to remove condensate and air from dryers. Install a Shartle engineered Coe Drainator system to control this removal. Do those two things and you will have opened the way to substantial savings in your mill.

No. 72 steamfits are completely self contained . . . provide a positive steam seal . . . and hold the syphon permanently in the correct position. And now, all Shartle No. 72 steamfits are equipped with the amazing new Z-7 steamfit sealing ring to eliminate squealing, gumming up, or the need for lubrication.

Coe Drainators require less piping as can be seen by studying the above photograph taken in a Pacific Coast mill. There are no by-passes, no air vents, no moving parts. When drying conditions change, the Drainators automatically adjust themselves to meet the new conditions.

Together, No. 72 steamfits and Coe Drainators maintain uniform drying temperatures. Production is increased . . . quality of the sheet is improved. Write for bulletins No. 67-S and 70-S. *Shartle Brothers, Middletown, Ohio, Division of the Black-Clawson Co.*

SHARTLE BROS.

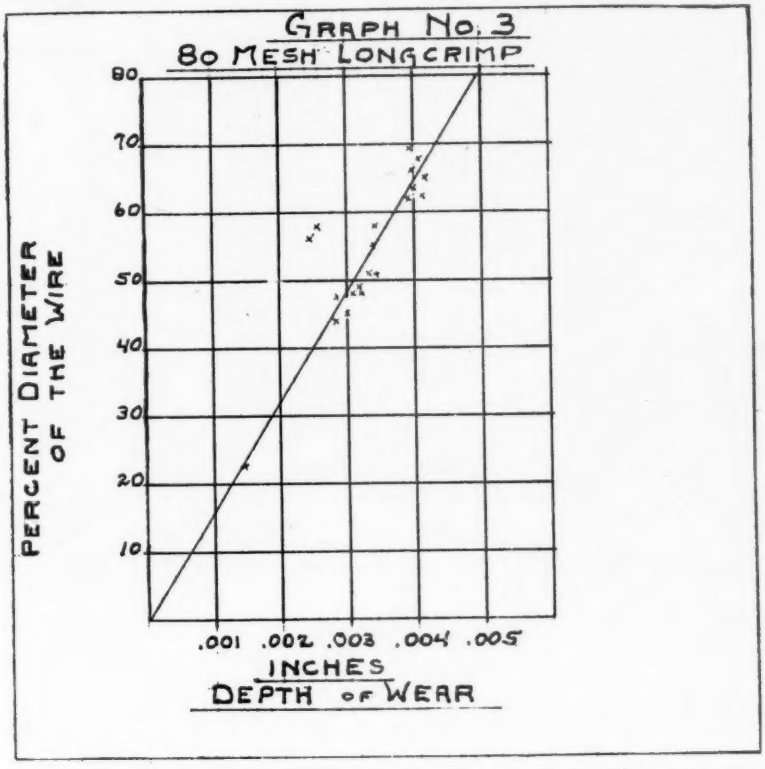
Stock Preparation Equipment

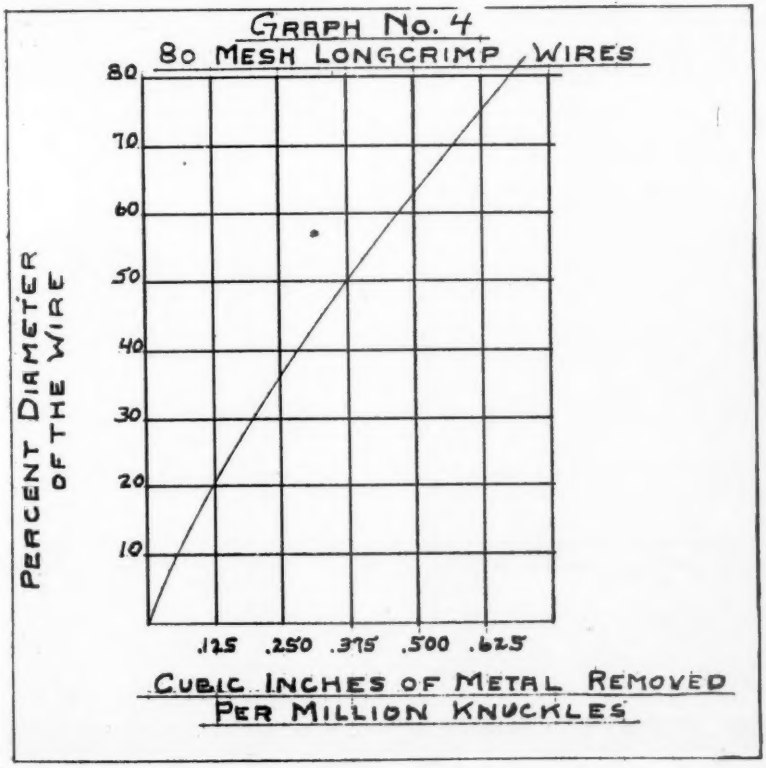
MR. ROBERT PETRIE
Pacific Coast Representative
3206 42nd Ave., N. E.
Portland, Oregon

of the wire left on the top side; (3) Thickness of the wire left on the bottom side. The percent worn diameter is calculated and from Graph 5 the percent wear figure is found.

While in an unusual case a wire may show as high as 80% to 90% wear, it has been found that any wire that shows 70% wear has, on the average, given full normal life.

Before going into the possibilities and uses of the percent wear figure, a number of physical conditions of the wire may be noticed while measuring the worn areas under a microscope. If any thing of importance is noted, a photomicrograph is taken. The following photomicrographs show some of the difficulties noted.





No. 1 shows a corroded shute wire. Besides the large pits that can be seen the rest of the shute wire was very rough.

No. 2 shows a wire that has been coated with a film of size and alum. If this condition gets very bad it will definitely decrease drainage.

No. 3 shows a wire that gave out before its time because of a worn suction box. Note the excessive wear on one side of the knuckles.

The following two photomicrographs were taken to show seam failure—

No. 4 shows the sound area of a wire seam.

No. 5 shows the broken area. It is possible to see that the wire gave out at the weld.

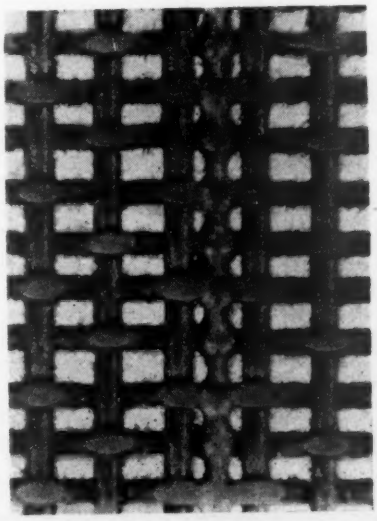
No. 6 shows a wire seam that ran but a day or two and started marking the sheet. Upon inspection, it was found that the shute wire was decomposed three or four wires back from the seam.

It is now interesting to consider the cause for removal of the 116 wires mentioned above. These may be listed as follows:

(1) Seam failure—10.

(2) Cracks—Edges and Center—40.
It might be well to mention that after a wire has been worn to a certain point, any little strain may cause it to crack out which would not effect it at all when it was new, and that a great many of these wires showed normal life, but upon inspection were found not to be completely worn out.

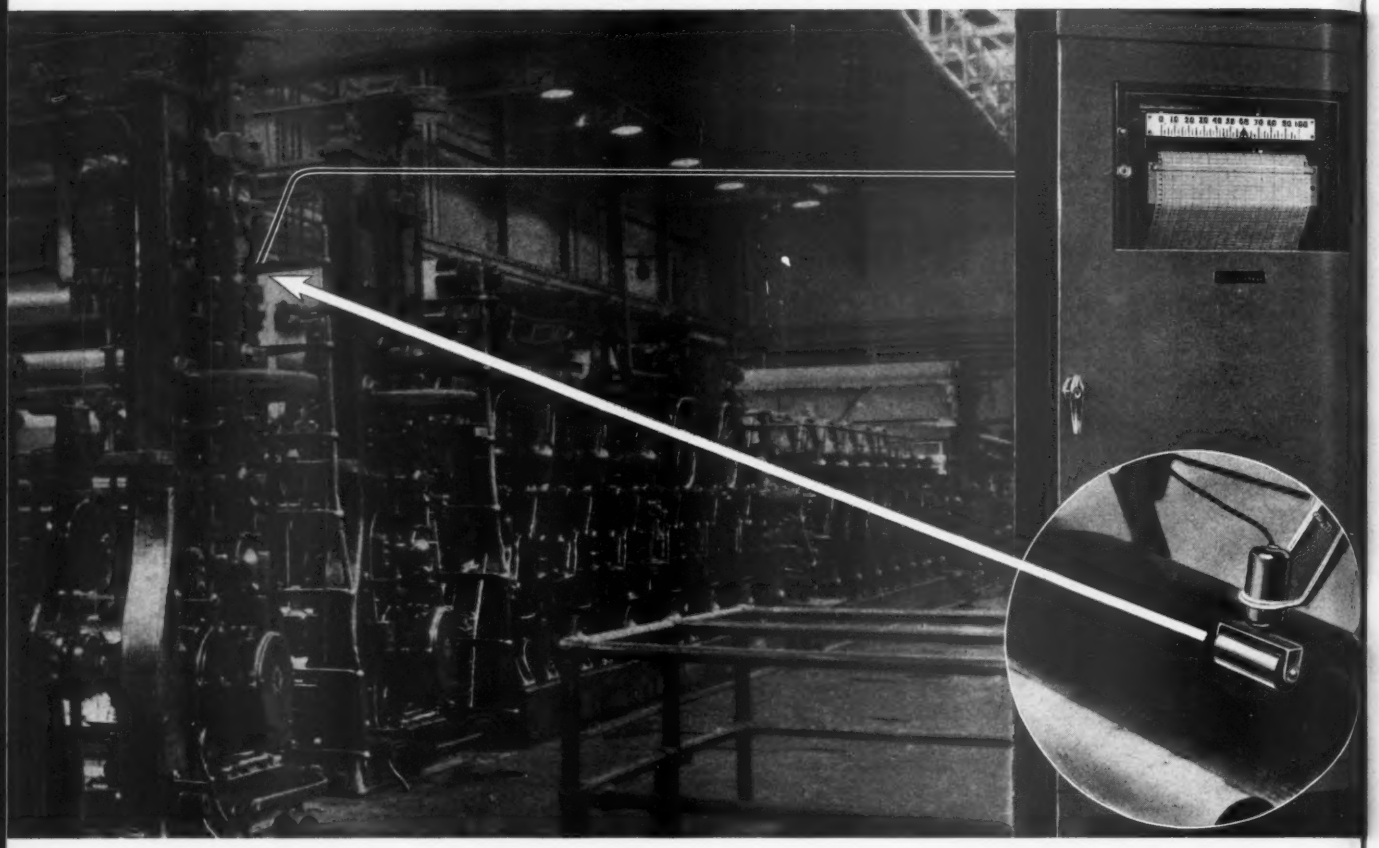
(3) Holes—27.
Holes might be classified as an indirect damage, as stock or some small foreign object may cause a small dent, which soon wears into a hole.



No. 2

Assures Perfectly Conditioned Paper

More Of It Per Shift



Directly Measures and Records

SHEET MOISTURE CONTENT

The Brown MOIST-o-GRAPH gives the paper maker continuous information on the final moisture content of his product. Furthermore, the complete foot-by-foot record for every roll made is available to management in the form of an open-scale chart, 12″ wide. Most important is the fact that moisture **in the paper itself** is continuously measured. Except as it may influence the web of paper passing over the final drying rolls, surrounding atmosphere has no effect whatsoever on the accuracy of MOIST-o-GRAPH recording.

With this instantaneous and thoroughly reliable reporter of sheet moisture content ever before him, the backtender has continuously reliable guidance for individual or collective regulation of the various roll temperatures. Sheet moisture may be carried as high as calendaring or other after-processing permits. There need never be any danger of overdried sheets causing customers trouble on press or in folding. On the other hand, weight may be kept up to commercial standard without fear of wet spots interfering with rolling or stacking.

Net operating costs decrease where MOIST-o-GRAPH is used. Holds spoilage and rejects to a minimum. Increases reputation for uniform product. Uses fewer pounds of steam per pound of paper and produces more tons per day. Safeguards against stops and breaks. Makes calendaring and other finishing processes easy. MOIST-o-GRAPH is management's safeguard over paper quality and continuous high level production.

Write THE BROWN INSTRUMENT COMPANY, a division of Minneapolis-Honeywell Regulator Company, 4438 Wayne Avenue, Philadelphia, Penna. Offices in all principal cities. Pacific Coast Sales Offices: 420 S. San Pedro St., Los Angeles—1136 Howard St., San Francisco —303 Selling Building, Portland—403 Terminal Sales Building, Seattle.

Brown MOIST-o-GRAPH is supplied with a large indicating scale which is easily read at a distant point. The moisture is continuously recorded on a 12″ chart, graduated 0-100 divisions.

Brown Detector Roll is mounted directly in contact with the web of paper as it leaves the final drying rolls.

How It Operates

Electrical resistance of paper is proportional to the moisture in the paper. The Brown MOIST-o-GRAPH accurately and continuously measures this resistance and records it as moisture effect on a 12″ continuous chart. The circuit is a very sensitive form of Wheatstone Bridge with unbalance effects multiplied thermionically. The galvanometer in this circuit causes a motor to reposition a balancing resistance to which is coupled the recording device. The primary element of the bridge circuit is the detector roll that tests the paper as it leaves the dryer, so that every moisture change is instantly detected and recorded.

BROWN MOIST-O-GRAPH

To Measure and Control is to Economize

(4) Damaged—12.

(5) Ridges—5.

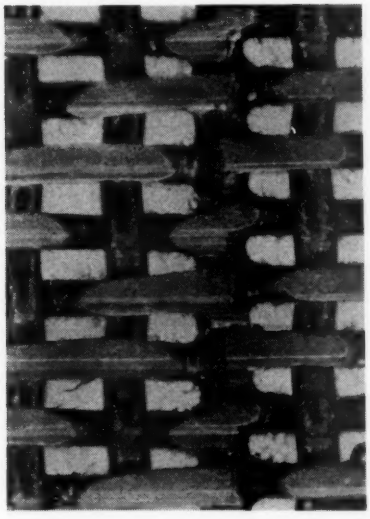
(6) Special grades requiring certain wires—5.

(7) Reasons not recorded—4.

(8) Actually worn out—13—as considered in this paper.

In order to get a picture of the wire experience of an individual paper machine, a graph is made in which the Percent Wear figure for each wire used is plotted against the Miles Run per Foot of Wire. Graph 6 is an example.

The short dotted line is the average for all machines during 1939, while the solid line is the average for this particular unit for 1939. It can be seen immediately that this unit wears out its wires more than the average. This condition might be alarming unless the conditions under which this machine operates are known. Grades and basis weights affect this materially.



No. 3

No. 1 Wire Make A Longcrimp	A. Gave normal life or better B. Ran 42 miles / foot of wire C. Showed 70% wear—considered a worn out wire
No. 2 Wire Make A Longcrimp	A. Showed good gain as compared with average life B. Ran 50 / foot of wire C. Showed 82% wear—considered a worn out wire
No. 3 Wire Make A Longcrimp	A. Showed a good gain B. Ran 43 miles / foot of wire C. Showed only 46% wear, and was removed because it cracked out on the edges. The rate of wear was better than usual. Perhaps this wire was a little too hard.
No. 4 Wire Make A Longcrimp	A. Showed a good gain B. Ran 36 miles / foot of wire C. Showed 58% wear, rate of wear normal—cracked out in the middle affected by the running of mill wrap.
No. 5 Wire	Quite similar to No. 3.
No. 6 Wire Make A Longcrimp	A. Showed excellent gain B. Ran 53 miles / foot of wire C. Showed 68% wear—actual failure due to several holes—good wire.
No. 7 Wire Make A Standard	A. Showed loss of life as compared with the average experience B. Ran 38 miles / foot of wire C. Showed 68% wear, holes caused its removal, light weight papers caused it to show a loss in tons / wire.
No. 8 Wire Make B Longcrimp	A. Damaged B. Ran 27 miles / foot of wire C. Showed 30% wear—% wear ratio was good. In other words, the wire was a good wire, but was damaged.

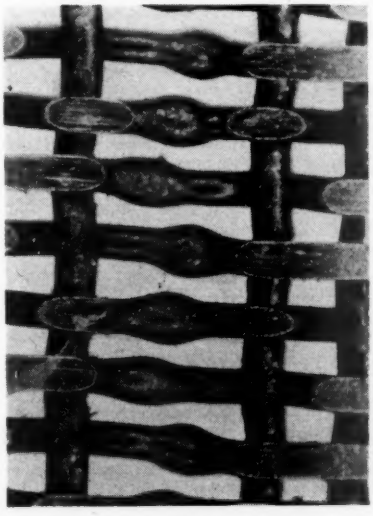
• The broken lines on either side of the average for the machine show supposedly normal deflections for the percent wear figure. For instance, Point (x) would have run 13 miles per foot of wire and have shown 71% wear, or a poor wearing wire. Point (1) ran 42 miles per foot of wire and showed 70% wear, a normal wearing wire. Point (6) ran 53 miles / foot of wire and showed 68% wear, or a good wearing wire.

It has been our purpose in the foregoing to present a practical basis for the measurement of wire wear and wire life in terms which may point the way to improved mill practice. The degree to which this improvement can be realized depends, of course, upon the manner in which the data is made use of by the mill operators. We have been fortunate in our mill in that the cooperation between operating and technical men has been all that could be asked and the information derived from this study served to stimulate real endeavor to improve wire life.

This material is placed before the actual machine operators as well as the machine supervision in the form of graphs.

A complete record is kept of each individual wire, including all technical data and personal comments by the supervision regarding reason for removal, operating conditions during wire life, and any other factors of importance.

It is anticipated that by continued observation of this data, wire life may be materially increased and corresponding economies realized.



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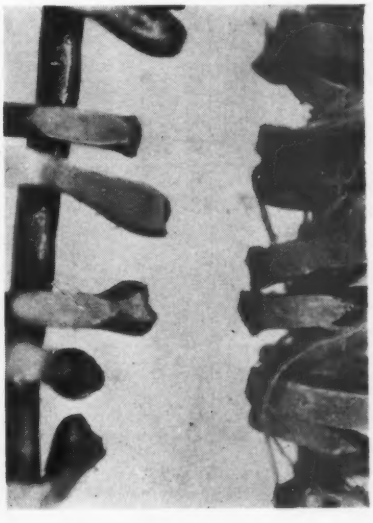
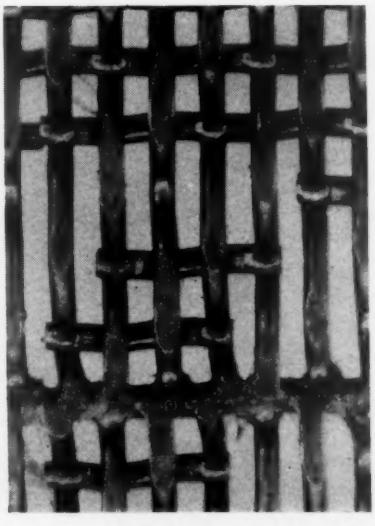


No. 5



No. 6

Industry Asks Only An Even Break

● In describing the variety of work for national defense being carried on by the General Electric Company, Philip D. Reed, chairman of the board declared in a radio broadcast that "American industry neither profits by nor under any circumstances desires war" and that industry would be "well satisfied" to complete the defense program "with no other assurances than that it shall not emerge with a net loss on the material produced or the investment in special plants and equipment required to do the job.

"American industry recognizes the need for defense rearmament," said Mr. Reed, "is actively and wholeheartedly cooperating with the Army, the Navy and the Advisory Defense Council, and will, in my judgment, do a job, unparalleled in history, of turning out the enormous quantity of defense equipment and supplies needed to make this nation a factor in the restoration of world peace."

If inflation is to be prevevnted and American standards of living preserved, Mr. Reed said that industry must at the same time continue to produce useful goods.

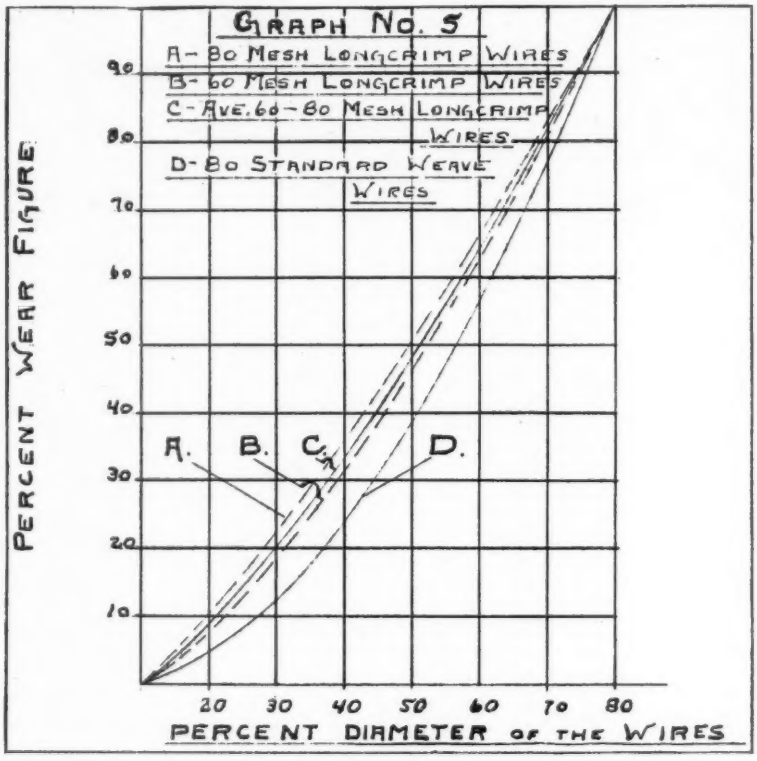
"To find ways of continuing the production of useful goods without impairing the defense program is a most important goal," he said "This may involve the use of a plastic, for example, in place of steel, an unskilled operator instead of a skilled one. But whatever the specific problems, they are well worth careful analysis and vigorous attack. For I am confident that an invaluable by-product of the defense program, and one that may play no small part of it, will be the technological advances it will surely yield . . .

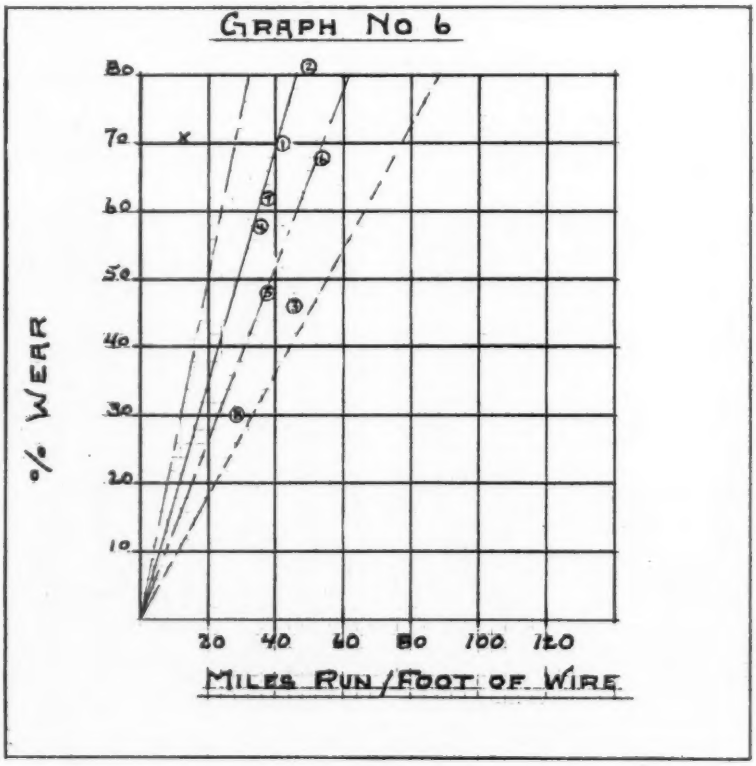
"Both tasks we regard as important, and both will receive our best attention. For as we succeed in stepping up the production and sale of useful goods we not only reduce the dangers of wartime inflation but we increase the national income and the national revenue—a definite step toward paying the price of the defense program."

Mr. Reed said that American industry has "no thought or intention of profiteering" in the rearmament program and that it from the first has favored adequate measures to prevent profiteering.

"American industry is made of millions of loyal, energetic men and women who are ready and eager to get on with this great project just as quickly as orders and specifications are forthcoming," said Mr. Reed. "Much preliminary work has been done and is being done in advance.

"When the arduous task of tooling up for these jobs is completed—and this in any case requires months, not days or weeks—the defense materials will stream from America's factories in quantities that will amaze the most optimistic observer. Thus may private enterprise creditably discharge its responsibility to the country and at the same time demonstrate to the American people that business is not the ogre that it has sometimes been painted and that free enterprise is among the most precious assets of the nation."





Germany Takes Finnish Pulp, Paper

● Under the agreement recently concluded between Germany and Finland, Germany will receive, among other primary products, wood pulp and paper. It is reported that Germany did not desire to take large quantities of wood products such as pulp, and only did so at Finland's request. In exchange for Finnish products Germany will ship quantities of coal and coke, iron and steel, and manufactured goods including paper. (American Embassy, Berlin).

Japanese Paper Production Lower

● The Japanese paper industry during the first quarter of this year continued to be characterized by rigid restrictions on production, especially of newsprint. The difficulties in securing adequate wood pulp supplies and chemicals act as brakes on an expansion of the industry which would be natural in normal times. Production of newsprint reportedly amounted to 66,639 short tons during the first 4 months of 1940, a decrease of approximately 20 per cent over the corresponding period before the beginning of the China Incident. More than 4,500 magazines and newspapers have been forced to discontinue publication over a period of a year and, according to press reports, a further drastic elimination of periodicals will soon be carried out. An additional factor affecting production of newsprint is the poor quality of pulp available for the manufacture of paper, all superior pulp being allotted to the rayon industry.

The only production figures available for the paper industry are those issued by the Japanese Paper Manufacturers Association. Production of machine-made paper by companies affiliated with the Association during the first quarter of 1940 amounted to 237-911 short tons, a decline of 5.8 per cent as compared with the preceding quarter, and approximately on a level with output during the corresponding quarter of 1939. Sales of paper by member companies during the first quarter of 1940 amounted to only 231,-197 tons; a decline of 6.5 per cent compared with those for the last quarter of 1939, but an increase of 5 per cent over the first quarter of the same year.

Paper imports during 1940, although including no printing paper, were double those of the preceding 3 months, owing to increased arrivals of packing and wrapping paper and imitation Japanese paper. Total arrivals amounted to 254 short tons, as compared with 4,185 in the corresponding quarter of 1938.

Exports of paper from Japan during the first quarter of 1940 amounted to 48,644 short tons. This represents a decrease of 23.2 per cent compared with exports for the preceding quarter of 1939. The heaviest reductions appeared in exports of Japanese paper, which were 41 per cent lower than in the previous quarter. Printing paper shipments declined by 18.7 per cent, and miscellaneous paper classified under "All other" by 20 per cent.

Shipments of paper to the yen-block areas were still predominant, representing 74 per cent of the total consignments. Outside of the yen-block countries the largest exports went to British India, the Netherlands Indies, Thailand, and Hong Kong. Less than 2 per cent of the total exports were consigned to the United States. (Office of the American Commercial Attache, Tokyo).

Pacific Coast Paper Mills Running Full Time

● The tissue mill of the Pacific Coast Paper Mills at Bellingham, Washington, is running at maximum production according to general manager, Paul Herb. The consistent advertising program carried on by the company has built up a steady consumer demand for MD, the principal line of toilet tissue.

Demand is increasing for the MD sanitary napkins, introduced less than two years ago.

Sealright Building New, Larger Los Angeles Plant

● Wm. S. Lee, executive vice-president of Sealright Pacific, Ltd., announced early in October the purchase of an acre and three-quarters of ground at Rio Vista and Soto Streets, Los Angeles, on which will be started immediately construction of a new plant. The expenditure for property, new building, and new equipment will be approximately $400,000.

The plant now operated at 3055 East 12th Street will be discontinued when the new plant is ready for occupancy, approximately December 15th.

A modernistic building will be constructed with a floor space of 37,-000 square feet. The company will manufacture at the new plant regular disc bottle caps, and in addition the new tamper-proof Sealon closure, Bulkans, and other items, previously manufactured in Fulton, New York. The building, of concrete construction throughout and modern in every detail, will have every facility for efficiently handling the firm's rapidly increasing volume of business. The Wm. P. Neil Company are architects and builders of this new plant.

The personnel will be greatly increased after the firm occupies its new quarters. The company is now entering its tenth year of business in Los Angeles. "Our progress," said Mr. Lee, "is due to the remarkable way our west coast creamery friends have accepted and used the many quality products manufactured by our organization."

Publishers' Newsprint Stocks At Higher Level in August

● Accumulation of stocks of newsprint by United States publishers continued during August, and at the end of that month stocks on hand stood at the highest figure since March 31, 1938. The increase during August was 44,136 tons, which followed a July rise of 58,286 tons, making the total rise for the two months of 102,422 tons.

At the end of August, stocks on hand or in transit of publishers reporting to American Newspaper Publishers Association stood at 407,424 tons, against 319,-096 on August 31, 1939.

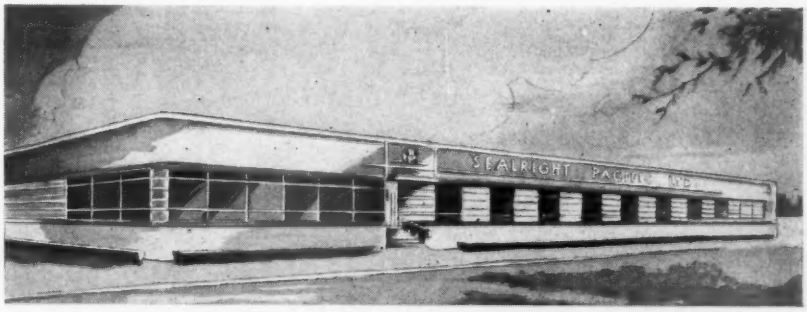
Consumption of newsprint by reporting publishers amounted to 213,105 tons during August, against 206,913 tons in July this year, and was an increase of 3.4 per cent over consumption in August of last year.

Manufacturers' stocks of newsprint dropped 2,666 tons during August to 235,871 tons, against a normal slight increase for the month. Manufacturers' stocks are now at the lowest point since December 31, 1938.

Stocks on hand for reporting publishers stood at 318,609 tons on August 1. During the month, 256,377 tons were received, 213,105 tons were used and 702 tons were sold, to leave stocks on hands at the end of the month at 361,179 tons. There were 46,245 tons of newsprint in transit to publishers, making the total on hand and in transit 407,424 tons, which was equal to 50 days' supply at the August rate of consumption.

Bakers and Confectioners Economizing With Boxes

● Paper box manufacturers report a tendency on the part of bakers and confectioners to use paper boxes more sparingly as a result of the increased cost of producing bread and cake due to higher flour prices and processing taxes. The bakers have been forbidden by the Canadian Wartime Prices Control Board to charge higher prices for their product, with the result that they have been compelled to economize wherever they can.



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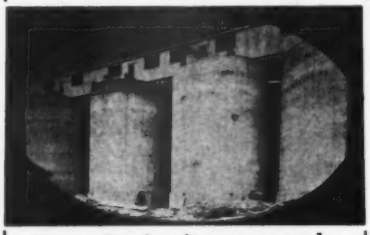

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Great Western Division of Dow Issues Caustic Booklet

● A practical 28-page manual for users of caustic soda has been published by Great Western Division, The Dow Chemical Company, San Francisco, makers of Bear Brand Caustic Soda and Canners' Soda.

The booklet contains charts, tables and other essential data on the characteristics of caustic soda and its solutions, handling of solid and liquid caustic and loading directions.

Great Western is offering the booklet free to users of caustic soda. Copies may be obtained by writing to Great Western Division, The Dow Chemical Company, 9 Main Street, San Francisco, California; 1201 Textile Tower, Seattle or 4151 Bandini Boulevard, Los Angeles.

Italy Raises Log Import Quota

● It was provided by Law No. 797 of June 21, 1940, published in the Official Gazette of July 15, to increase the quota of rough logs admitted duty-free up to 410,000 metric tons (metric ton equals 2,204.6 pounds.

Duty-free imports of mechanical and chemical wood pulp have been authorized in Italy for some time in order to provide adequately for the requirements of the national paper and rayon industries. Recently Italy has been utilizing wood for the production of its own pulp and the authorized quota for duty-free wood for the production of pulp was increased from 120,000 metric tons to 180,000. As a result of plant enlargement and increased production possibilities, the above-mentioned quota has proved insufficient—hence the new law increasing the amount which may be entered free of duty up to 410,000 metric tons. (Office of the American Commercial Attache, Rome).

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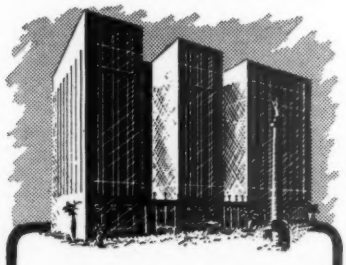

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Powell River Dam Construction on Schedule

● Construction of the new permanent dam for Powell River Company at Lois River is proceeding on schedule, according to officials of Stuart Cameron & Company of Vancouver, contractors for the $900,000 project.

Construction crews worked on a three-shift basis during the summer and early fall to take advantage of the clear weather. Excavation of the abutments is well under way and sections of the foundation excavation on either side of the riverbed are in progress.

At the end of September about 7000 cubic yards of rock and other material had been removed.

The concrete plant with mixers, sand and gravel bunkers, and so on, is now complete and pouring of the thrust block and wing wall on the west side of the dam has already started.

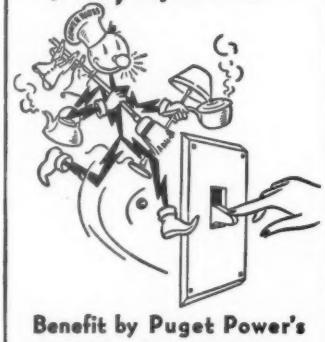
Southerlands Visit Pacific Coast

● Louis W. Sutherland, president of the Sutherland Paper Company of Kalamazoo, Michigan, Mrs. Sutherland and their son Louis, Jr., spent several days in the Pacific Northwest the latter part of September before going to Southern California.

It was Mr. Sutherland's first trip to the Pacific Coast. He visited the Camas mill of the Crown Willamette Paper Company, Division of Crown Zellerbach Corporation.

While in Portland the Sutherlands were guests of Mr. and Mrs. Alec Duncan. Mr. Duncan is manager of the Paper Makers Chemical Division of the Hercules Powder Company and formerly lived in Kalamazoo.

SWITCH TO Reddy Kilowatt



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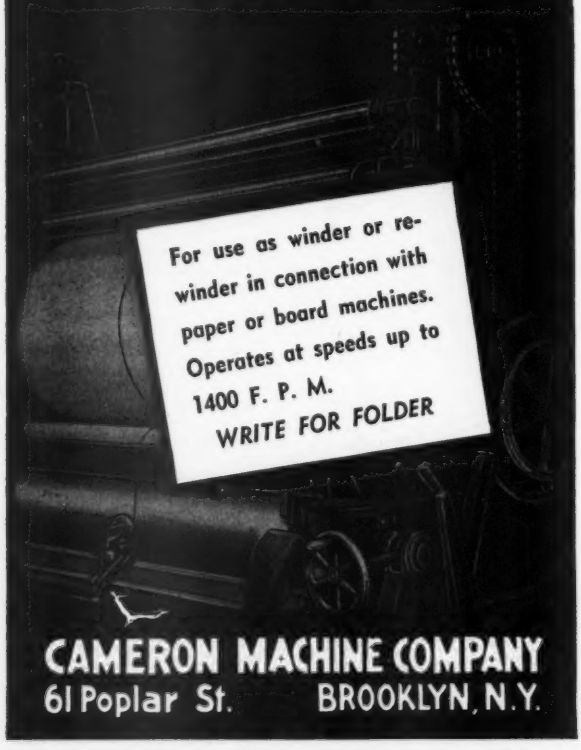
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